THE EFFECT OF CHANGING EXPORT CONTROLS ON COOPERATION IN SCIENCE AND TECHNOLOGY

HEARING

BEFORE THE

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY U.S. HOUSE OF REPRESENTATIVES

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THE EFFECT OF CHANGING EXPORT CONTROLS ON COOPERATION IN SCIENCE AND TECHNOLOGY

WEDNESDAY, MAY 16, 1990

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
Washington, D.C.

The committee met, pursuant to call, at 9:35 a.m., in Room 2318, Rayburn House Office Building, Hon. Robert A. Roe, [chairman of the committee] presiding.

The CHAIRMAN. Good morning, ladies and gentlemen. The subject of today's hearing is the effect of changing export controls on science and technology. It is as important to the work of this committee as any other subject that we will consider during the Congress.

It speaks to our ability and willingness to engage in cooperative projects like joint U.S./Soviet exploration of space and it strongly influences the competitiveness of our high-tech industries in global markets.

But above all, the export control issue touches upon the future source of scientific talent to the United States universities and laboratories and the free flow of scientific communications. In short, the underpinnings upon which science, space and technology are advanced in this country.

The timing of our hearing is, of course, a result of the extraordinary changes in the political landscape of Eastern Europe, changes which have led to calls throughout the Western Alliance to liberalize the flow of technology to the Eastern Bloc. The United States has, for years, lagged behind other nations in proposing reforms in the Coordinating Committee on Export Controls, known as COCOM.

Next month, in Paris, however, the United States and 16 other members of COCOM will begin the most serious discussion in COCOM's 40-year history on reform of the organization. We know in advance of the Paris meeting that liberalization of the system is inevitable. That much was guaranteed two weeks ago when the President announced a new set of United States proposals and we have a panel of administrative witnesses here today to discuss these initiatives.

We hope to move the discussions today beyond the question of whether a particular gadget or widget, so to speak, should or should not be exported to China or to the Soviet Union or to Poland. From the standpoint of this committee, what is important is not only trade and commodities, but trade and ideas and people.

A common theme has permeated the work of the committee over the past three years, namely, that the future of this country, both in terms of national security and economic strength, will depend on our commitment and excellence in science, space, technology and education.

Ironically, although the future of the United States is tied to science and technology, the conduct of that science will have to become increasingly international. It is no secret why this is so. First of all, the costs of many of the worthwhile projects are so vast that no one country can possibly undertake—undertake them alone. The space station, $30 billion estimate. The superconducting super collider, $7 billion. The Earth Observing System, $30 billion. Human exploration of Mars is estimated somewhere to 4- to $500 billion. And we need to think globally even to begin to undertake these initiatives.

Secondly, the human talent for undertaking these projects of the future is spread all over the world and certainly a great deal of that talent is located in the Soviet Union, China and the nations of Eastern Europe. In these countries, there are thousands of scientists who are eager to cooperate with their colleagues in the United States, but who are prevented from doing so by concerns over national security or by bureaucratic snafus on both sides.

One of the factors frustrating greater East/West scientific cooperation today is the frequent failure of the United States visa process to accommodate legitimate travel requests from Eastern Europe's scientists. We have assembled 10 distinguished witnesses today from the administration, from the United States scientific community and from the U.S. business community to examine these and other questions.

We will begin by reviewing the administration's perspectives on the type of export control regime that we can expect in the future. But beyond that, we intend to look at the effect that a less restrictive regime may have on all forms of technical cooperation with the Eastern Bloc.

For example, will changes in COCOM affect our willingness and ability to cooperate with the Soviet Union in high-tech—high-technology ventures of all kinds? This is an exceedingly timely question.

Later this afternoon, this committee will meet with 12 distinguished Soviet scientists to discuss proposals for cooperation in space and fusion energy research. We know that many of the Soviet proposals that we will hear will not be acceptable under current rules and perhaps they should be.

Does it make sense, for example, to classify every product and project associated with space, including the toilet on the Space Shuttle, as a proscribed item on the military critical list? Are we unnecessarily losing opportunities in trade and in science and technology with this sort of mentality?

Does it make sense to hold up a cooperative space project with the Soviets because it includes a hardened computer chip which can be purchased today in 100 stores in Budapest? I, for one, do not think so.

The challenge for us is, in today's hearing, what will be greater than illuminating the relationship between export controls and na-

tional security or between export controls and the balance of trade. We must also shed light on the effect that export controls will have on the ability of this country and the rest of the world to move forward on the great scientific endeavors that would create the new wealth and the jobs of the 21st century.

In the final analysis, we can put controls on the movements of products, but we can never truly control the free flow of thoughts and ideas. Could there have been a more vivid demonstration of this principle than the astounding advances that were made three years ago in the field of super conductivity? The crucial experiments were conducted in a Swiss laboratory by a Chinese-born scientist and funded by the United States Department of Defense. Within days, the results were communicated throughout the world by fax machines and electronic mail.

This is the model of cooperation that we should bear in mind today as we listen to testimony and the effect of export controls on the scientific endeavor. After all, the Berlin Wall, which could never fall, has fallen. What other walls need to be come down to open our markets to the free world?

Let me conclude, while we are examining the scientific details of the administration's new COCOM proposals and while we are discussing what I know will be excellent testimony from today's witnesses, perhaps the question we all have in mind—at least in the back of our minds—and that question would be, has the world political order so fundamentally changed in recent months that COCOM itself is no longer necessary?

That is the framework in which we wanted to make our initial presentation.

The Chair would recognize the distinguished gentleman from Illinois, Mr. Harris Fawell. Did you have any comments you want to make?

Mr. FAWELL. No comments.

The CHAIRMAN. No comments from the gentleman from Illinois.

[The prepared opening statement of Mr. Ritter follows:]

OPENING STATEMENT
HON. DON RITTER (R-PA)
THE EFFECT OF CHANGING EXPORT CONTROLS ON
COOPERATION IN SCIENCE AND TECHNOLOGY

MAY 16, 1990

THANK YOU, MR. CHAIRMAN. DURING MOST OF THE PERIOD FOLLOWING WORLD WAR II, WE HAVE RESTRICTED THE ACCESS OF SENSITIVE TECHNOLOGY TO COUNTRIES WHICH ARE NOT OUR ALLIES, THROUGH A COMPLEX EXPORT CONTROL SYSTEM AND PARTICIPATION IN COCOM.

WE HAVE NOT ALWAYS BEEN SUCCESSFUL AT KEEPING STRATEGIC INNOVATION FROM THE SOVIETS AND OTHERS. IN 1987, THE TOSHIBA CORPORATION WAS ABLE TO SELL MILLING MACHINES TO THE SOVIETS, DESPITE COCOM RULES. IN 1982, AN AMERICAN FIRM SOLD MACHINERY TO THE SOVIETS WHICH COULD BE USED TO MAKE ADVANCED MATERIALS FOR MISSILE GUIDANCE.

HOWEVER, TO A VERY LARGE EXTENT, COCOM RESTRICTIONS HAVE PUT A BIG DENT IN SOVIET BLOC ACQUISITION OF CRITICAL TECHNOLOGIES OVER THE YEARS. CAN YOU IMAGINE THE FLOOD OF TECHNOLOGY TRANSFER OVER THE YEARS TO

THE COMMUNIST WORLD, WERE IT NOT FOR AMERICAN LEADERSHIP?

SOME SAY THAT SWEEPING POLITICAL CHANGES IN EASTERN EUROPE AND THE SOVIET UNION ITSELF MAKE IT NECESSARY TO RELAX THE EXPORT CONTROL SYSTEM, AND ALLOW AMERICAN COMPANIES TO SELL MORE SOPHISTICATED TECHNOLOGY TO THE EAST.

THE FEAR IS THAT IF WE DON'T HELP POLAND BUILD A MODERN TELECOMMUNICATIONS SYSTEM, THE WEST GERMANS OR JAPANESE WILL, DEPRIVING OUR COMPANIES OF BUSINESS. INDEED, THERE HAVE BEEN STUDIES WHICH SUGGEST THAT THE COST TO AMERICAN COMPANIES OF NOT BEING ABLE TO EXPORT CERTAIN PRODUCTS IS HIGH.

THE ECONOMY FOR HIGH-TECH PRODUCTS IS DECIDEDLY GLOBAL. THE QUESTION IS, SHOULD WE JUST OPEN THE FLOOD GATES, OR USE A MORE BALANCED APPROACH WHICH FOCUSES ON TRULY STRATEGIC ITEMS? THE EMERGING DEMOCRACIES OF EASTERN EUROPE HAVE SO MUCH TO DO TO BRING THEMSELVES INTO THE MODERN WORLD. IT IS

UNLIKELY THAT THEY COULD USE ALL OF OUR ADVANCED TECHNOLOGY RIGHT AWAY.

AS THE JAPANESE HAVE SHOWN US, A RAPID TRANSFER OF ADVANCED AMERICAN TECHNOLOGY MAY EVENTUALLY PUT SOME COUNTRIES IN A POSITION TO COMPETE WITH US, WHILE AT THE SAME TIME EXPANDING THEIR APPETITE FOR AMERICAN PRODUCTS AND SERVICES.

ALSO, THERE ARE NO ASSURANCES THAT "DUAL USE" TECHNOLOGY WILL NOT FALL INTO THE HANDS OF THE SOVIETS, WHO CONTINUE TO MODERNIZE THEIR NUCLEAR FORCES AND THEIR MILITARY TECHNOLOGY. SOVIET ARMED FORCES HAVE YET TO BE DESIGNATED BENIGN. GIVEN THE RECENT STEPS WHICH THE SOVIET UNION HAS TAKEN TO RETARD DEMOCRACY AND SELF-DETERMINATION IN THE BALTIC STATES, WE MUST QUESTION WHETHER RIGHT NOW IS THE BEST TIME TO BE UNDERGOING A TOTAL LIBERALIZATION OF EAST-WEST TRADE.

THE ADMINISTRATION HAS PROPOSED TO BRING TO COCOM A REVISED EXPORT CONTROL LIST FOCUSED ON TRULY

STRATEGIC ITEMS. THAT SEEMS TO BE A GOOD BALANCE, AND ONE WHICH WILL HELP STRENGTHEN THE COCOM PROCESS, WHICH STILL HAS MEANING. REFORM SHOULD ALSO HAVE A BENEFICIAL IMPACT ON COOPERATION IN RESEARCH.

WE SHOULD TRY TO STRIKE A BALANCE BETWEEN SUSTAINING THE HEALTH OF OUR MANUFACTURING ENTERPRISES AND OUR WORLD TRADE POSITION IN CERTAIN HIGH TECHNOLOGIES, SUCH AS COMPUTERS, AND INSURING THAT OUR NATIONAL SECURITY IS NOT COMPROMISED.

THE PACE OF CHANGE IN THE EAST IS EXHILIRATING. YET ONLY MONTHS AGO, EAST BLOC NATIONS WERE UNDER COMMUNIST RULE, AND SOVIET TROOPS STILL OCCUPY EASTERN EUROPE. UNCERTAINTY, PARTICULARLY IN THE U.S.S.R., IS THE RULE. UNTIL WE ARE MORE CERTAIN THAT THE LIBERALIZATION AND DEMOCRATIZATION IN THE EASTERN BLOC AND THE U.S.S.R. ARE IRREVERSIBLE, WE SHOULD BE CAUTIOUS ABOUT SWEEPING LIBERALIZATION OF OUR EXPORT POLICIES.

The CHAIRMAN. All right, that is the basic thought and concern of the committee, and our first panel we welcome this morning is Ambassador Allan Wendt, who is the Senior Representative from Strategic Technology Policy, Department of State; Ms. Joan McEntee, who is the Deputy Under Secretary, Department of Commerce, Washington, D.C.; and Mr. William N. Rudman, Deputy Under Secretary of Defense for the Trade Security Policy, Department of Defense, Washington, D.C.

The Chair wants to welcome all of our distinguished administration witnesses this morning and the Chair would defer to the distinguished ambassador, Allan Wendt, for his opening statement.

Ambassador, welcome.

STATEMENTS OF AMBASSADOR ALLAN WENDT, SENIOR REPRESENTATIVE FOR STRATEGIC TECHNOLOGY POLICY, DEPARTMENT OF STATE; JOAN McENTEE, DEPUTY UNDER SECRETARY, DEPARTMENT OF COMMERCE; AND WILLIAM N. RUDMAN, DEPUTY UNDER SECRETARY OF DEFENSE FOR TRADE SECURITY POLICY, DEPARTMENT OF DEFENSE

Ambassador WENDT. Thank you very much, Mr. Chairman. It's a pleasure to appear before the committee this morning on this important topic.

With your permission, I will provide a brief summary of my testimony and submit my written statement for the record.

The CHAIRMAN. No objection, so ordered.

Ambassador WENDT. Thank you.

Mr. Chairman, we are witnessing dramatic changes in Eastern Europe and the Soviet Union, changes unimaginable only a few months ago. We must update multilateral export controls in response to the changed strategic environment. This will ensure that export controls do not impede the reform process or unnecessarily inhibit increased East/West cooperation in such areas as business, science and the environment.

To that end, Mr. Chairman, on April 30th, the President approved a comprehensive U.S. proposal for the modernization of COCOM controls. The proposal reflects the changing nature of the strategic threat by providing greater access to advanced technology by the COCOM-proscribed countries. At the same time, the proposal continues to protect truly critical technology that, if released, would qualitatively undermine the West's strategic technological edge.

The proposal has five main components. One, adoption of a core list for all proscribed destinations by the end of 1990. Two, immediate decontrol for all proscribed destinations of approximately 40 dual-use items. This is over one-third of the current list.

Three, decontrol to approximately the China Green Line; that is, the level at which items can be shipped now to the People's Republic of China at national discretion.

Four, expansion of earlier U.S. proposals in three priority sectors: telecommunications, computers and machine tools.

And five, renewed commitment by members of COCOM to enhance enforcement of the controls on the remaining items.

In addition, we seek more favorable treatment in COCOM for Eastern European countries that are determined to be in transition to removal from the list of proscribed destinations and that adopt COCOM-approved safeguards against diversion.

Mr. Chairman, the core list is the centerpiece of our proposal. The other immediate decontrol measures and the revision of our earlier proposals in telecommunications, computers and machine tools are bridging measures that will facilitate formation of a core list.

Our entire proposal is based on rigorous strategic analyses by the Joint Staff and the intelligence community. At the same time, we are mindful of the pressing economic needs of the proscribed countries and the need to ensure that COCOM does not constitute a barrier to legitimate civilian trade.

We believe the immediate steps we are proposing, particularly in the priority sectors of computers, telecommunications and machine tools, would enable Eastern Europe and the Soviet Union to install the information processing systems, as well as the modern manufacturing equipment necessary to carry out business efficiently in the 1990s.

The formation of the core list by 1990 would not only completely restructure the COCOM control system by writing the controls anew from scratch, but would also further reduce the scope of the controls. Preferential treatment for qualifying Eastern European countries is an important part of our proposal. We believe that these countries should receive favorable treatment in COCOM for all but a small number of items on the control list.

Diversion and intelligence cooperation is our major strategic concern regarding Eastern European countries. If tangible assurances, credible assurances against this activity can be obtained, we believe it is strategically justified to grant preferential treatment to these countries.

We have already held informal discussions with several Eastern European countries. All have been very receptive to the idea of adopting the types of safeguards we consider necessary.

Adoption of preferential treatment in COCOM, like the entire proposal, is, of course, subject to further consultation with our COCOM partners. In general, the initial allied reaction to our comprehensive proposal has been positive. They have welcomed the proposal as a genuine effort to revamp the COCOM system.

It is difficult to pinpoint the effect of our comprehensive proposal on science and technology cooperation. Export controls are but one of a myriad of factors affecting the level and extent of such cooperation. Relaxed export controls would certainly ease certain aspects of science and technology cooperation, but perhaps more important are the overall East/West political climate and the ability of scientists to travel freely.

The climate is improving for free and open scientific exchange. We believe our comprehensive proposal helps ensure that national security export controls do not stand in the way of following through on new opportunities that will strengthen links between East and West in a manner beneficial to all.

Thank you, Mr. Chairman.

[The prepared statement of Ambassador Wendt follows:]

TESTIMONY OF ALLAN WENDT
SENIOR REPRESENTATIVE FOR STRATEGIC TECHNOLOGY POLICY
before the
COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

We are witnessing dramatic changes in Eastern Europe and the Soviet Union, changes unimaginable only a few months ago. We must update multilateral export controls in response to the changed strategic environment. This will ensure that export controls do not impede the reform process or unnecessarily inhibit increased East-West cooperation in such areas as business, science and the environment.

US Comprehensive Proposal for COCOM

In January, the President ordered a comprehensive review of U.S. strategic export controls, which are maintained in cooperation with our 16 COCOM partners. The Joint Staff and the intelligence community have thoroughly analyzed all currently controlled "dual-use" goods and technologies (goods with both military and civilian applications that are on the COCOM Industrial List) in light of the changing East-West strategic environment. Based on their evaluations, the Department of State coordinated formation of a comprehensive proposal for COCOM, approved by the President on April 30, that calls for a complete overhaul of the COCOM system.

Our proposal reflects the changing nature of the strategic threat and provides for greater access to advanced technology by the COCOM-proscribed countries. At the same time, we would continue to protect truly strategic technologies that, if acquired by the proscribed countries, would qualitatively undermine the West's strategic technological edge that is crucial to our security. We propose, in effect, to build the long promised "higher fences around fewer goods."

The U.S. proposal has five main components:

1. adoption of a "core list" for all proscribed destinations by the end of 1990;
2. immediate decontrol for all proscribed destinations of about 40 dual-use items (over one-third of the current list);
3. decontrol to approximately the China Green Line;
4. expansion of earlier U.S. proposals in three priority sectors (telecommunications, computers and machine tools); and
5. renewed commitment by members to enhance enforcement of the controls.

In addition, we seek more favorable treatment in COCOM for countries that COCOM members determine are in transition to removal from the list of proscribed destinations and that adopt COCOM-approved safeguards against diversion to military use.

The core list is the centerpiece of our proposal. The other measures, including expansion and revision of our previous proposals on machine tools, telecommunications, and computers, will provide immediate decontrol of a wide range of items. These measures will also facilitate formation of the core list.

Priority Sectors

The three sectors identified by COCOM members as priority sectors -- computers, telecommunications and machine tools -- have understandably received a great deal of attention. They account for a large percentage of all licensing activity and are clearly of great importance to the modernization of the economies of Eastern Europe and the Soviet Union.

Our proposals in these three areas, like the entire comprehensive proposal, are based on strategic criteria. At the same time, we are mindful of the pressing needs of the proscribed countries for equipment in these sectors and of Western business opportunities. We believe our proposals will ensure that COCOM controls do not become a barrier to economic redevelopment and enhanced East-West trade. Our proposed liberalizations in these three sectors would significantly enhance the ability of Eastern Europe and the USSR to improve their economic infrastructure. These countries would be able to install the communications and information processing systems, as well as the modern manufacturing equipment, that are necessary to carry out business efficiently in the 1990s and beyond.

I will briefly summarize our position in each sector.

Computers

We propose decontrol of virtually all personal computers. Mainframe computers would be exportable under favorable consideration procedures up to the level currently exportable at national discretion to China. Most office local area networks would also be decontrolled. This includes the popular Ethernet and Token Ring networks. In addition, the export of products necessary for the assembly of decontrolled products would be favorably considered, thereby facilitating joint ventures. Finally, some hard disk drives would also be decontrolled, e.g., those commonly supplied with personal computers and small to mid-range mainframes.

Telecommunications

We propose decontrol to all destinations of, among other items, analog cellular telephone systems and satellite ground stations for civil telecommunications or television use. We are also proposing national discretion licensing (no COCOM review) of packet switching up to the China Green Line and favorable consideration in COCOM for joint ventures to assemble digital switches.

For Eastern European countries that adopt COCOM-agreed criteria for preferential treatment, we seek to permit sale, at national discretion, of modern fiber optic and microwave transmission equipment. Our proposal would allow export of fiber optic and microwave equipment with digital transmission rates up to 156 megabits per second. We do not propose changing current controls for exports to the USSR of fiber optic and microwave transmission equipment.

Machine Tools

The machine tool negotiations have been long and difficult. We believe we will now be able to conclude an agreement with our Allies to modernize and simplify the controls. For example, the positioning accuracy control level will be changed from ±10 microns to ±2 or 3 microns depending on the type of machine tool. Under our proposal, there are no restrictions on the release of production technology for machine tools, their controllers, and parts and components that do not exceed the current control criterion of ±10 microns. Production technology for more sophisticated equipment would be licensed under a favorable consideration procedure.

Core List Formation

Our objective in forming the core list is a complete restructuring (from scratch) and further reduction of the COCOM controls. Work on the core list would supersede COCOM's traditional incremental List Review process.

The core list would be built around five to ten broad categories of critical technology. In composing the specific content of the core list, we would write all controls in a "positive" manner, meaning that only what is specifically listed is controlled. (Many of the current controls are written so as to control all items in a given category, unless specifically exempted.) This approach will enable us identify and control only those individual items and technologies that would qualitatively improve Soviet military systems. As we go through this process, we will also take into account such factors as Soviet indigenous production, availability from non-COCOM sources, and the inherent controllability of items.

Preferential Treatment

An important part of our comprehensive proposal is preferential treatment for those countries that adopt safeguards against diversion of technology and are deemed by COCOM to be in transition to removal from the list of proscribed destinations. We believe that these countries should receive favorable treatment in COCOM for all but a small number of items on the control list.

If we can obtain adequate tangible assurances against diversion to military use, we believe it would be strategically justified to grant preferential treatment. Safeguards are not an absolute guarantee against diversion to military use but they will, we believe, reduce risk to an acceptable level. This preferential treatment is a recognition of strategic reality, not political discrimination against the USSR or any other country. Furthermore, we believe it is in our interest to build cooperative export control relations with countries that, in the future, may well no longer be subject to COCOM controls.

We have held informal discussions with several Eastern European countries on safeguarding Western technology. All of them have been very positive about the prospects of adopting the types of safeguards we believe are necessary to reassure us regarding diversion and intelligence cooperation.

Our proposal for preferential treatment for qualifying countries will need to be discussed further with our COCOM partners. Some of our partners were wary of preferential treatment when we proposed it as part of our interim proposals to COCOM in February. They wanted to focus COCOM's efforts on modernizing the controls for all destinations. Our comprehensive proposal includes much more across-the-board streamlining than did our interim proposals and we hope our COCOM partners will join us in concluding agreement on this approach.

Effect of Proposal on Science and Technology Cooperation

It is difficult to pinpoint the effect our proposal would have on the ability and willingness of the U.S. to engage in cooperative science and technology with Eastern Europe and the USSR. Relaxed controls in general add to the more positive climate for scientific and technical cooperation. Specific relaxations, such as in computers, will enhance the ability of cooperating partners to collaborate effectively. However, more important in determining the level of scientific cooperation with a given country are the overall political climate and freedom of travel, as well the mutual scientific and technological benefit received from the cooperation.

East-West science and technology cooperation has traditionally waxed and waned in parallel with the general state of East-West relations. For example, after the declaration of martial law in Poland and during the latter years of the Ceaucescu regime, science and technology cooperation diminished. In contrast, as Poland and Hungary have moved toward democracy, the level of cooperation has risen.

In many areas of scientific cooperation, particularly in research and development, cooperation takes the form of personnel exchanges. Thus, the freedom to travel between East and West becomes an important factor. Eastern Europe and the Soviet Union have reduced the travel restrictions on their nationals. For its part, the U.S. has centralized clearance procedures for all Soviet and Eastern European nationals seeking visas for scientific or technical purposes. All such applications are referred to Washington for interagency review to determine if the exchange poses a problem in terms of controlled technology. The COCOM controls are used as a guideline in the review process. Thus, as controls are modernized, the review process will also become less complex.

Scientific cooperation facilitates access to and development of advanced technology that is necessary for economic progress. Science and technology cooperation can contribute to reaching our foreign policy goals of encouraging democratization, free market economies, and strengthened links to the West -- all of which ultimately help ensure U.S. national security and economic vitality. Opportunities are expanding for greater scientific and technical cooperation with Eastern Europe and the USSR. We believe our comprehensive proposal will help ensure that export controls do not stand in the way of following through on new opportunities.

Conclusion

Our comprehensive proposal is an important step forward for national security export controls. We believe it will ensure that COCOM continues to be an effective guarantor of Western security. At the same time it will allow enhanced East-West economic and technical interaction to the benefit of all.

The CHAIRMAN. Thank you, Ambassador.
The Chair recognizes Ms. McEntee.
Ms. MCENTEE. Thank you, Mr. Chairman.
I am also—
The CHAIRMAN. Secretary McEntee.
Ms. MCENTEE. Thank you.
I am also very—very pleased to be here this morning to be able to testify before the committee.

I would ask permission to read a short statement and I will try not to repeat what the Ambassador has said, but try to address the issue from the industry perspective.

Mr. Chairman, your oversight responsibilities over U.S. research and development puts you in an excellent position to understand the massive effort and funding that U.S. industry must put into research and development in order to remain competitive in today's world market. Export controls clearly have some impact on the ability of U.S. firms to fund R&D. Exports generate profit that fund R&D programs.

The high-technology sector, in particular, faces a dual problem. New generations of equipment have shorter and shorter life spans and foreign competition from Asia and Europe is, indeed, intense. That means that U.S. high-technology firms must devote large portions of their profit into R&D. If their ability to export is unduly hampered, their ability to fund expensive R&D programs costs would be negatively affected.

Our major market today is clearly the free world. However, our export controls, while aimed at controlling sensitive technology to communist countries, also affect U.S. high-tech exports worldwide. That's because many controlled items require a U.S. export license to every destination except Canada.

Thus, any liberalization of controls for communist countries would also result in greater ability for U.S. firms to export freely to noncommunist countries if there are no foreign policy restrictions.

Maintaining our technological lead time is as important in the national security area as it is in the commercial area. The interrelationship between these two sectors is obvious. It has been the commercial sector that has driven the U.S. technological advances.

That, in turn, has benefited our weapons systems. We must take care, therefore, to not unduly throttle that source of technological advancement. This administration, as the Ambassador has said, has indeed undertaken steps to craft an export control framework that would permit American corporations to participate in Eastern Europe's development without compromising our security interests.

President Bush ordered a national security review which included an analysis by the CIA and the Joint Chiefs of Staff to provide a sound basis for U.S. review of current export controls. The review concluded that a complete overhaul of the export control system is indeed warranted.

In some areas, technological developments had made the controls obsolete. In others, there is widespread and uncontrolled foreign availability of these items to the Soviet Union, making our controls ineffective. I know that Mr. Rudman will be talking more about the NSR also.

The President agreed that there was need to refine the export control system. As Ambassador Wendt mentioned, he instructed the United States to seek at next month's high-level COCOM meeting, agreement from our allies to develop by the end of 1990 a core list of commodities and technologies which will be carefully controlled by each member country.

Our objective is to strengthen multilateral controls through a fundamental restructuring that would focus on truly strategic items. To achieve this goal, the United States has proposed the following steps: the adoption of the core list; the elimination of about 40 items from the existing control list; liberalization in those three categories of telecommunications, computers and machine tools; relaxation of technological control parameters for most other goods and technology up to what is known as the China Green Line; and renewed commitment by COCOM partners to improve enforcement of multilateral controls, a very, very important part of the program.

Our goal is to have a core list implemented by the end of this calendar year. We believe the core list should be limited to truly strategic items. Commerce is working with the Joint Chiefs to identify those items that could contribute significantly to the development of new Soviet weapons systems and improved countermeasures against Western forces.

While strategic considerations are the fundamental force driving the core list development, other factors, as I mentioned, will also be weighed, such as foreign availability and countries that maintain no export controls and Soviet indigenous capabilities.

Overall, the net effect of the core list will be a reduction in the volume and value of high-technology commodities still subject to export controls worldwide.

Let me make clear that these proposals are the President's initiatives. They have the support of the entire administration. For the U.S. industrial base, they will result in substantial benefits. First, we are calling for the immediate control of about 40 dual-use items. If accepted, as Ambassador Wendt mentioned, this will eliminate about 30 percent of all items presently controlled.

We are also proposing that control parameters for most goods and technology be relaxed up to the China Green Line for all proscribed destinations. Goods that fall into this category are of limited strategic value.

Therefore, this step will result in little strategic gain for the Soviets. It will, however, generate important export opportunities for U.S. industry, whose sales of lower-level items help fund R&D costs for new technologies.

In telecommunications, for example, which you mentioned this morning, Mr. Chairman, we have proposed eliminating controls on all mobile radios, for example, including analogues, cellular systems, which will allow Eastern European countries and the Soviet Union to provide effective, plain old telephone service, what our industry calls POTS, easily and quickly. They will not have to complete the long and costly process of constructing a finished network before basic service can be provided.

We propose decontrolling satellite ground stations for civil television, broadcast radio, telecommunications and weather and earth

resources communication systems. We would liberalize certain data communications switching equipment. In addition, we would allow the export of advanced telephone transmission equipment, both fiber optic and microwave, to Eastern European countries that adopt a safeguards regime to protect against diversion.

With regard to computers, virtually all commonly available off-the-shelf personal computers would be decontrolled, as well as some office computers. Also, restrictions on standard peripherals and local area networks used with these computers would be relaxed.

Larger machines, such as those used in the banking or airline industry, would remain under control, but will receive favorable licensing consideration.

Our proposal for machine tools could result in the first substantive change in those controls in 15 years. If adopted by COCOM, the new technical parameters should provide much relief to this beleaguered U.S. industry, whose viability is so critical to our manufacturing base and national security.

Combined, these three sectors and the other items recommended be completely decontrolled represent a substantial proportion of all export license requests. Based on 1989 figures, it is estimated that these reforms will reduce the number of licenses issued in these three areas by about 50 percent. This represents approximately 40- to $50 billion in export trade.

The U.S. proposal represents opportunities for U.S. companies in both East and West. If adopted, the Eastern Europeans will have access to quality goods and technology that are vital for modernizing their domestic infrastructure and industrial plant.

Let me make clear that this administration does not see trading with Eastern Europe as being at cross purposes to maintaining our national security. Quite the contrary. A strong economy is an essential pillar for the continuance of peace and prosperity.

In an economically strong United States, in an economically integrated Europe, both West and East are critical, also, to our national security.

I am confident that by eliminating controls so that the focus is clearly on strategic goods and technology, both sides will gain and prosper.

Thank you, Mr. Chairman.

[The prepared statement of Ms. McEntee follows:]

STATEMENT BY
JOAN M. McENTEE
DEPUTY UNDER SECRETARY OF COMMERCE FOR EXPORT ADMINISTRATION
BEFORE THE
HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY
WEDNESDAY, MAY 16, 1990
"THE EFFECT OF CHANGING EXPORT CONTROLS ON COOPERATION IN SCIENCE AND TECHNOLOGY"

THANK YOU MR. CHAIRMAN. I AM PLEASED TO BE HERE TODAY TO DISCUSS THE CURRENT EVOLUTION IN U.S. EXPORT CONTROLS FOLLOWING THE DEVELOPMENTS IN EASTERN EUROPE AND THE SOVIET UNION.

YOUR OVERSIGHT RESPONSIBILITIES OVER U.S. RESEARCH AND DEVELOPMENT PUT YOU IN AN EXCELLENT POSITION TO UNDERSTAND THE MASSIVE EFFORT AND FUNDING THAT U.S. INDUSTRY MUST PUT INTO RESEARCH AND DEVELOPMENT IN ORDER TO REMAIN COMPETITIVE IN THE WORLD MARKET. EXPORT CONTROLS CLEARLY HAVE SOME IMPACT ON THE ABILITY OF U.S. FIRMS TO FUND R&D. EXPORTS GENERATE PROFITS THAT FUND R&D PROGRAMS. THE HIGH TECHNOLOGY SECTOR, IN PARTICULAR, FACES A DUAL PROBLEM: NEW GENERATIONS OF EQUIPMENT HAVE SHORTER AND SHORTER LIFE SPANS, AND FOREIGN COMPETITION FROM ASIA AND EUROPE IS INTENSE. THAT MEANS THAT U.S. HIGH TECHNOLOGY FIRMS MUST DEVOTE LARGE PORTIONS OF THEIR PROFITS INTO R&D. IF THEIR ABILITY TO EXPORT IS UNDULY HAMPERED, THEIR ABILITY TO FUND EXPENSIVE R&D COSTS COULD BE NEGATIVELY AFFECTED.

OUR MAJOR MARKET TODAY IS CLEARLY THE FREE WORLD. HOWEVER, OUR EXPORT CONTROLS, WHILE AIMED AT CONTROLLING SENSITIVE TECHNOLOGIES TO COMMUNIST COUNTRIES, ALSO AFFECT U.S. HIGH TECHNOLOGY EXPORTS WORLDWIDE. THAT IS BECAUSE MANY CONTROLLED ITEMS REQUIRE A U.S. EXPORT LICENSE TO EVERY DESTINATION EXCEPT CANADA. THUS, ANY LIBERALIZATION OF CONTROLS FOR COMMUNIST COUNTRIES WOULD ALSO RESULT IN GREATER ABILITY FOR U.S. FIRMS TO EXPORT FREELY TO NON-COMMUNIST COUNTRIES IF THERE ARE NO FOREIGN POLICY RESTRICTIONS.

MAINTAINING OUR TECHNOLOGICAL LEAD TIME IS AS IMPORTANT IN THE NATIONAL SECURITY ARENA AS IT IS IN THE COMMERCIAL ARENA. THE INTERRELATIONSHIP BETWEEN THESE TWO SECTORS IS CLEAR. IT HAS BEEN THE COMMERCIAL SECTOR THAT HAS DRIVEN THE U.S. TECHNOLOGICAL ADVANCES. THAT, IN TURN, HAS BENEFITTED OUR WEAPONS SYSTEMS. WE MUST TAKE CARE, THEREFORE, TO NOT UNNECESSARILY HAMPER THAT SOURCE OF TECHNOLOGICAL ADVANCEMENT.

THIS ADMINISTRATION HAS UNDERTAKEN STEPS TO CRAFT AN EXPORT CONTROL FRAMEWORK THAT WOULD PERMIT AMERICAN CORPORATIONS TO PARTICIPATE IN EASTERN EUROPE'S DEVELOPMENT WITHOUT COMPROMISING OUR SECURITY INTERESTS.

PRESIDENT BUSH ORDERED A NATIONAL SECURITY REVIEW (NSR), WHICH INCLUDED SEPARATE ANALYSES BY THE CIA AND THE JOINT CHIEFS OF STAFF, TO PROVIDE A SOUND BASIS FOR U.S. REVIEW OF CURRENT EXPORT CONTROLS. THE NSR ENCOMPASSED A NEW ASSESSMENT OF SOVIET TECHNOLOGICAL REQUIREMENTS FOR MILITARY PURPOSES. THE REVIEW CONCLUDED THAT A COMPLETE OVERHAUL OF THE EXPORT CONTROL SYSTEM IS WARRANTED. IN SOME AREAS, TECHNOLOGICAL DEVELOPMENTS HAD MADE THE CONTROLS OBSOLETE. IN OTHER AREAS, THERE IS WIDESPREAD AND UNCONTROLLED FOREIGN AVAILABILITY OF THESE ITEMS TO THE SOVIET UNION, MAKING OUR CONTROLS INEFFECTIVE.

THE PRESIDENT AGREED THAT THERE WAS A NEED TO REFINE THE EXPORT CONTROL SYSTEM. HE HAS INSTRUCTED THE UNITED STATES TO SEEK, AT NEXT MONTH'S HIGH LEVEL COCOM MEETING, AGREEMENT FROM OUR ALLIES TO DEVELOP, BY THE END OF 1990, A CORE LIST OF COMMODITIES AND TECHNOLOGIES WHICH WILL BE CAREFULLY CONTROLLED BY EACH MEMBER COUNTRY. OUR OBJECTIVE IS TO STRENGTHEN MULTILATERAL CONTROLS THROUGH A FUNDAMENTAL RESTRUCTURING THAT WOULD FOCUS ON TRULY STRATEGIC ITEMS. TO ACHIEVE THIS GOAL, THE UNITED STATES HAS PROPOSED THE FOLLOWING STEPS:

A. ADOPTION OF A CORE LIST FOR ALL PROSCRIBED DESTINATIONS BY THE END OF THIS YEAR;

B. ELIMINATION OF ABOUT 40 ITEMS FROM THE EXISTING CONTROL LIST;

C. LIBERALIZATION OF CONTROLS IN THREE SPECIFIC KEY SECTORS: TELECOMMUNICATIONS, COMPUTERS, AND MACHINE TOOLS;

D. RELAXATION OF TECHNICAL CONTROL PARAMETERS FOR MOST OTHER GOODS AND TECHNOLOGY UP TO THE CHINA GREEN LINE; AND

E. RENEWED COMMITMENT BY COCOM PARTNERS TO IMPROVE ENFORCEMENT OF MULTILATERAL CONTROLS.

OUR GOAL IS TO HAVE A CORE LIST IMPLEMENTED BY THE END OF THIS CALENDAR YEAR. THE CORE LIST SHOULD BE LIMITED TO TRULY STRATEGIC ITEMS. WE ARE WORKING WITH THE JOINT CHIEFS OF STAFF TO IDENTIFY THOSE ITEMS THAT COULD CONTRIBUTE SIGNIFICANTLY TO THE DEVELOPMENT OF NEW SOVIET WEAPON SYSTEMS AND IMPROVED COUNTERMEASURES AGAINST WESTERN FORCES.

WHILE STRATEGIC CONSIDERATIONS ARE THE FUNDAMENTAL FORCE DRIVING THE CORE LIST DEVELOPMENT, OTHER FACTORS WILL ALSO BE WEIGHED. THESE FACTORS INCLUDE AVAILABILITY OF THE SAME ITEMS FROM COUNTRIES THAT MAINTAIN NO EXPORT CONTROLS, AND SOVIET INDIGENOUS CAPABILITIES.

OVERALL, THE NET EFFECT OF THE CORE LIST WILL BE A MAJOR REDUCTION IN THE VOLUME AND VALUE OF HIGH TECHNOLOGY COMMODITIES STILL SUBJECT TO EXPORT CONTROL WORLDWIDE.

LET ME MAKE CLEAR THAT THESE PROPOSALS ARE THE PRESIDENT'S INITIATIVE -- THEY HAVE THE SUPPORT OF THE ENTIRE ADMINISTRATION.

FOR THE U.S. INDUSTRIAL BASE, THEY WILL RESULT IN SUBSTANTIAL BENEFITS: FIRST, WE ARE CALLING FOR THE IMMEDIATE DECONTROL OF ABOUT 40 DUAL-USE ITEMS. IF ACCEPTED, THIS WILL ELIMINATE NATIONAL SECURITY CONTROLS ON ABOUT 30 PERCENT OF ALL ITEMS PRESENTLY CONTROLLED.

WE ARE ALSO PROPOSING THAT CONTROL PARAMETERS FOR MOST GOODS AND TECHNOLOGY BE RELAXED UP TO THE CHINA GREEN LINE FOR ALL PROSCRIBED DESTINATIONS. GOODS THAT FALL INTO THIS CATEGORY ARE OF LIMITED STRATEGIC VALUE. THEREFORE, THIS STEP WILL RESULT IN LITTLE STRATEGIC GAIN FOR THE SOVIETS. IT WILL, HOWEVER, GENERATE IMPORTANT EXPORT OPPORTUNITIES FOR U.S. INDUSTRY WHOSE SALES OF LOWER LEVEL ITEMS HELP FUND R&D COSTS FOR NEW TECHNOLOGIES.

WE ARE ALSO RECOMMENDING SIGNIFICANT LIBERALIZATION IN THREE KEY INDUSTRIAL SECTORS THAT HAVE SEEN LITTLE OR NO DECONTROL FOR 15 YEARS: TELECOMMUNICATIONS, COMPUTERS, AND MACHINE TOOLS.

IN TELECOMMUNICATIONS, WE HAVE PROPOSED ELIMINATING CONTROLS ON ALL MOBILE RADIOS, INCLUDING ANALOG CELLULAR SYSTEMS WILL ALLOW EASTERN EUROPEAN COUNTRIES AND THE SOVIET UNION TO PROVIDE EFFECTIVE, PLAIN OLD TELEPHONE SERVICE -- WHAT OUR INDUSTRY CALLS "POTS" -- EASILY AND QUICKLY. THEY WILL NOT HAVE TO COMPLETE THE LONG AND COSTLY PROCESS OF CONSTRUCTING A FINISHED NETWORK BEFORE BASIC SERVICE CAN BE PROVIDED.

WE PROPOSE DECONTROLLING SATELLITE GROUND STATIONS FOR CIVIL TELEVISION, BROADCAST RADIO, TELECOMMUNICATIONS, AND WEATHER AND EARTH RESOURCES COMMUNICATION SYSTEMS.

WE WOULD LIBERALIZE CERTAIN DATA COMMUNICATIONS SWITCHING EQUIPMENT. IN ADDITION, WE WOULD ALLOW THE EXPORT OF ADVANCED TELEPHONE TRANSMISSION EQUIPMENT -- BOTH FIBER OPTIC AND MICROWAVE -- TO EASTERN EUROPEAN COUNTRIES THAT ADOPT A SAFEGUARDS REGIME TO PROTECT AGAINST DIVERSION TO PROSCRIBED DESTINATIONS.

WITH REGARD TO COMPUTERS, VIRTUALLY ALL COMMONLY-AVAILABLE, OFF-THE-SHELF PERSONAL COMPUTERS WOULD BE DECONTROLLED, AS WELL AS SOME OFFICE COMPUTERS. ALSO, RESTRICTIONS ON STANDARD PERIPHERALS AND LOCAL AREA NETWORKS USED WITH THESE COMPUTERS WOULD BE RELAXED.

LARGER COMPUTING MACHINES, SUCH AS THOSE USED IN THE BANKING OR AIRLINE INDUSTRY, WOULD REMAIN UNDER CONTROL, BUT WOULD RECEIVE FAVORABLE LICENSING CONSIDERATION.

OUR PROPOSAL FOR MACHINE TOOLS COULD RESULT IN THE FIRST SUBSTANTIVE CHANGE IN THOSE CONTROLS IN 15 YEARS. IF ADOPTED BY COCOM, THE NEW TECHNICAL PARAMETERS SHOULD PROVIDE MUCH RELIEF TO THIS BELEAGUERED U.S. INDUSTRY, WHOSE VIABILITY IS SO CRITICAL TO OUR MANUFACTURING BASE AND NATIONAL SECURITY.

COMBINED, THESE THREE SECTORS AND THE OTHER ITEMS RECOMMENDED BE COMPLETELY DECONTROLLED REPRESENT A SUBSTANTIAL PROPORTION OF ALL EXPORT LICENSE REQUESTS. BASED ON 1989 FIGURES, IT IS ESTIMATED THAT THESE REFORMS WILL REDUCE THE NUMBER OF LICENSES ISSUED IN THESE THREE AREAS BY ABOUT 50 PERCENT. THIS REPRESENTS APPROXIMATELY 40-50 BILLION DOLLARS IN EXPORT TRADE.

THE U.S. PROPOSAL REPRESENTS OPPORTUNITIES FOR U.S. COMPANIES IN BOTH THE EAST AND WEST. IF ADOPTED, THE EAST EUROPEANS WILL HAVE ACCESS TO QUALITY GOODS AND TECHNOLOGY THAT ARE VITAL FOR MODERNIZING THEIR DOMESTIC INFRASTRUCTURE AND INDUSTRIAL PLANT. THE EMERGING EASTERN EUROPEAN ECONOMIES, ON THE OTHER HAND, OFFER THE WEST WORTHWHILE MARKETS FOR INVESTMENT AND TRADE AS WELL AS SOME OF THE WORLD'S TOP MINDS IN BASIC RESEARCH.

LET ME MAKE CLEAR THAT THIS ADMINISTRATION DOES NOT SEE TRADING WITH EASTERN EUROPE AS BEING AT CROSS PURPOSES TO MAINTAINING OUR NATIONAL SECURITY. QUITE THE CONTRARY. A STRONG ECONOMY IS AN ESSENTIAL PILLAR FOR THE CONTINUANCE OF PEACE AND PROSPERITY. AN ECONOMICALLY STRONG UNITED STATES AND AN ECONOMICALLY INTEGRATED EUROPE -- BOTH WEST AND EAST -- ARE CRITICAL TO OUR NATIONAL SECURITY.

I AM CONFIDENT THAT BY ELIMINATING CONTROLS SO THAT THE FOCUS IS CLEARLY ON STRATEGIC GOODS AND TECHNOLOGY, BOTH SIDES WILL GAIN AND PROSPER.

DURING THE JUNE HIGH LEVEL COCOM MEETING, WE EXPECT THAT A UNIFIED PLAN ON FUTURE MULTILATERAL CONTROLS AND COOPERATION WILL BE FORMULATED.

MR. CHAIRMAN, THAT COMPLETES MY PREPARED STATEMENT. I WILL BE PLEASED TO ANSWER ANY QUESTIONS THE COMMITTEE MAY HAVE.

The CHAIRMAN. I thank you very much for your testimony.

I think what we will do—is this—is it the Journal vote on the Journal? Why don't we just stop here while we have this continuity and we will go vote and come right back. So if you will just be patient with us.

[Recess.]

The CHAIRMAN. We will convene. There are other members coming, but there are like 17 million hearings this morning. So it is their loss.

The Chair recognizes Secretary Rudman.

Mr. RUDMAN. I thank you, Mr. Chairman.

I appreciate this opportunity to appear before you today.

The Department of Defense recognizes the important and dramatic changes sweeping the Warsaw Pact countries, as well as the challenges and opportunities these changes provide for the United States and NATO allies to forge a more stable, democratic and peaceful world.

We recognize that it is clearly in our country's interest to nurture and encourage political and economic reform throughout Eastern Europe. Proposals to release technology geared toward improving the civil infrastructures of these nations and taking into account our national security interests, are an important component of such efforts.

The Department of Defense has been an active and energetic participant in all interagency negotiations and consultations concerning reform of the international export control regime.

As has been said, the President announced on May 2nd that we will present significant proposals at the high-level meeting of the COCOM Committee in June. This announcement followed a careful U.S. Government evaluation initiated in January of this year of the impact of ongoing political changes on the military requirements for export controls and on military and intelligence cooperation among the members of the Warsaw Pact.

This evaluation included an assessment of the potential impact of increased technology transfers on the Warsaw Pact critical military mission areas. Based on this analysis, the U.S. proposals reflect the changing strategic threat and provide for increased access of East European countries and the Soviet Union to advanced technology—advanced technology particularly in certain priority areas, namely telecommunications, computers and machine tools, as well as most goods and technologies that are currently licensable to the PRC at national discretion by individual COCOM members.

Moreover, the United States will recommend, as you have heard, the development by the end of 1990 of the new core list which will capture only those items of greatest potential military and strategic impact. To facilitate transition to the core list, the proposal also includes immediate elimination of approximately one-third of the existing COCOM industrial list items, which I believe to be militarily less significant.

Preferential treatment for the East European countries versus the USSR, flowing from the very different level of military threat that they pose, is an important element of the U.S. proposal. As Secretary Cheney has pointed out, while the threat from the East Bloc has diminished, the Soviet Union still possesses enormous

military power and through its strategic nuclear weapons remains the one nation on earth with the capability to threaten our survival.

The modernization of Soviet military forces continues, particularly in the area of strategic nuclear forces, and there is evidence that the Soviet campaign of technology acquisition from the West to support this modernization has actually increased.

Certain European countries have indicated a willingness to adopt safeguards against technology diversion. We are consulting with our COCOM partners on the exact nature of and criteria for preferential treatment. The extent to which Eastern European countries can implement effective and appropriate safeguards would affect the pace and nature of international technological cooperation.

We are also asking our COCOM allies to renew their commitment to COCOM's strategic principles and improve enforcement of the controls. The U.S. will seek adherence to the previously agreed common standard levels of protection against diversion and illegal acquisition.

Let me now turn to how U.S. competitiveness could be affected. In the short term, reformed export controls could improve the bottom-line position of the more aggressive U.S. companies, providing some impetus for an increase in international technical cooperation, joint ventures and overseas U.S. facilities. The increased earnings, if directed towards U.S. R&D, could contribute to the future—to the future U.S. industrial competitiveness.

In basic scientific research, export controls have never been a major barrier to cooperative programs with the Eastern Bloc, especially since unclassified basic research is, in effect, free of export control.

In the past, the major impediments to the increased scientific cooperation with the Eastern Bloc have generally been lack of projects of legitimate scientific interest and mutual benefit and a lack of funding. We expect these problems would continue, but some marginal increase in the potential for useful scientific cooperation could result from eased export controls.

Where a less restrictive export control regime would have an impact is in projects that rely heavily on previously embargoed equipment that is not inherently military in nature.

Since fewer items would be controlled on COCOM's dual-use list, there would generally be less technology control under COCOM's rules.

In the face of substantially increased numbers of visit applications by East Bloc scientists and engineers, the Department of Defense continues to participate in the U.S. Government review, identifying potential risks through technology security. The U.S. COCOM proposals allows for "differentiation" designed to encourage positive political change in Eastern Europe. To the extent that licensing differentiation would facilitate increased science and technology cooperation, the political effect could be reinforced.

We must bear in mind, however, that to date, there has only been limited scientific and technological cooperation between Eastern Europe and any of the highly developed industrial economies, including those in Western Europe, Japan and the U.S.

Thank you, sir.

[The prepared statement of Mr. Rudman follows:]

Testimony of William N. Rudman

Deputy Undersecretary of Defense for

Trade Security Policy

Before the

Committee on Science, Space, and Technology

of the U.S. House of Representatives

Wednesday, May 16, 1990

Mr. Chairman, members of the Committee, I appreciate this opportunity to appear before you today to testify on the international export control regime.

The Department of Defense recognizes the important and dramatic changes sweeping the Warsaw Pact countries as well as the challenges and opportunities these changes provide for the United States and the NATO allies to forge a more stable, democratic, and peaceful world. We recognize that it is clearly in our country's interest to nurture and encourage political and economic reform throughout Eastern Europe. Proposals to release technology geared toward improving the civil infrastructures of these nations and taking into account our national security interests are an important component of such efforts. The Department of Defense has been an active and energetic participant in all interagency negotiations and consultations concerning reform of the international export control regime.

The President announced on May 2nd that we will present significant proposals at the High Level Meeting of the Coordinating Committee on Multilateral Export Controls in June. This announcement followed a careful U.S. Government evaluation initiated in January of the impact of ongoing political changes on the military requirements for export controls and on military and intelligence cooperation among the members of the Warsaw Pact. This evaluation included an assessment of the potential impact of increased technology transfers on Warsaw Pact critical military mission areas.

Based on this analysis, the U.S. proposals reflect the changing strategic threat and provide for increased access of East European countries and the Soviet Union to advanced technology, particularly in certain priority sectors -- computers, telecommunications equipment, and machine tools -- as well as most goods and technologies currently licensable to the People's Republic of China at national discretion by individual COCOM members.

Moreover, the United States will recommend the development by the end of 1990 of a new "core list" which will capture only those items of greatest potential military and strategic impact. To facilitate transition to the "core list," the proposal also includes immediate elimination of approximately one-third of existing COCOM Industrial List items which are believed to be militarily less significant.

Preferential treatment for the East European countries versus the USSR, flowing from the very different level of military threat that they pose, is an important element of the U.S. proposal. As Secretary Cheney has pointed out, while the threat from the East Bloc has diminished, the Soviet Union still possesses enormous military power and -- through its strategic nuclear weapons -- remains the one nation on earth with the capability to threaten the survival of our nation. The modernization of Soviet military forces continues, particularly in the area of strategic nuclear forces, and there is evidence that the Soviet campaign of technology acquisition from the West to support this modernization has actually increased.

Certain East European countries have indicated a willingness to adopt safeguards against technology diversion. We are consulting with our COCOM partners on the exact nature of and criteria for preferential treatment. The extent to which East European countries can implement effective and appropriate safeguards would affect the pace and nature of international technological cooperation.

We are also asking that our COCOM allies renew their commitment to COCOM's strategic principles, and improve enforcement of controls. The United States will seek adherence to the previously agreed common standard levels of protection against diversion or illegal acquisition.

Let me now turn to how U.S. competitiveness could be affected. Less restrictive controls are a double-edged sword. In the short term, reformed export controls should improve the bottom-line position of the more aggressive U.S. companies, providing some impetus for an increase in international technical cooperation, joint ventures and overseas U.S. facilities. The increased earnings, if directed to U.S. R&D, could contribute to future U.S. industrial competitiveness.

In basic scientific research, export controls have never been a major barrier to cooperative programs with the Eastern Bloc, especially since unclassified basic research is in effect free of export control. In the past, the major impediments to increased scientific cooperation with the Eastern Bloc have generally been lack of projects of legitimate scientific interest and mutual benefit, and lack of funding. We expect these impediments would continue, but some marginal increase in the potential for useful scientific cooperation could result from eased export controls. Where a less restrictive export regime would have an impact is in projects that rely heavily on previously embargoed equipment not inherently military in nature.

Since fewer items would be controlled on COCOM's dual use list, there would be generally less technology controlled under COCOM's rules. Controls on transfer of munitions (defense articles) and classified technical data are not expected to change.

In the face of substantially increased numbers of visit applications by East Bloc scientists and engineers, the Department of Defense continues to participate in U.S. Government review identifying potential risks to technology security. The U.S. COCOM proposal allows for "differentiation" designed to encourage positive political change in Eastern Europe. To the extent that licensing differentiation would facilitate increased science and technology cooperation, the political effect could be reinforced. We must bear in mind, however, that to date there has been only limited scientific and technological cooperation between Eastern Europe and any of the highly developed industrial economies, including those in Western Europe, Japan, and the United States.

Mr. Chairman, that concludes my prepared statement. I would be happy to answer any further questions.

The CHAIRMAN. The Chair wants to thank you very much for your testimony and all of the full—without objection, all of the full testimony will be placed in the record at this point.

For the record, let me get a couple of questions on and then I want to make a couple of observations. As far as DOC is concerned, Ms. McEntee, what was the role of DOC in arriving at the list of 40 items to be controlled? Was there any role?

Ms. MCENTEE. Yes, Mr. Chairman, quite substantial. We—we, first of all, took a look at the industrial list category, over 120 items, and examined them very carefully in a variety of circumstances and with a variety of aspects, looking at each industrial list category.

We looked and we took what we call sort of a foreign availabilities scrub, looking at what was available in large quantities in those non-COCOM-controlled Eastern European countries, those communist countries, what was actually already available. We looked at off-the-shelf—what was available off the shelf, readily available and factored that into an assessment.

We also looked at things that were controllable in the sense of being able to actually physically control what was doable and finally, we also took a look and consulted with what—what Commerce calls our TACs, our Technical Advisory Committees, our industry Technical Advisory Committees, to look at consistency, to make sure that if we were looking at decontrolling, for example, one part of a technology or a product, that the peripherals that would accompany it would be, indeed, consistent.

And we fed all that information in the industry side of the information, if you will, to the study that Bill Rudman was talking about before, the study by the Joint Chiefs, to help bring about their conclusions on the final strategic list review.

So I think it was a very cooperative effort. I think it was very much of a joint effort and I think we are—one of the reasons why we feel so comfortable with the outcome is we do feel that we played a very, very substantial role.

The CHAIRMAN. Thank you.

Ambassador Wendt, you were describing the administration's proposal to liberalize trade in telecommunications and computers, yet the United States industry continues to be critical of this proposal. How do you respond to the criticism of the Chamber of Commerce on the U.S. proposal we'll deny Eastern Europe the telecommunications and super computers they need to modernize their economy?

Ambassador WENDT. Mr. Chairman, I think it's understandable that particular segments of the industry will look at particular aspects of our proposals and perhaps wish we might have gone further here and there. I think if you look at the broad sweep of the proposals, you cannot honestly conclude that these proposals will deny Eastern European countries the opportunity they need to modernize their economies.

Remember, they're starting from a very low base and the question is, what is most advantageous to them? They need basic equipment that will give them effective telecommunications system, for example. They do not necessarily need the very latest sophisticated software that may be in use in the United States.

We believe that our proposals fully take into account their needs. I think we can justify them. I think that some of the criticisms reflect the particular interests of firms involved. That is perfectly understandable. We would expect that, but I must say that in our discussions with our allies, we have met a—a positive reaction, a favorable reaction. Some discussion is still going on in ad hoc working groups in COCOM.

For example, they are meeting on computers this week with a view to reaching a final agreement before the COCOM high-level meeting in early June. With regard to telecommunications, our proposal will give these countries a modern system that will support their development needs, we think, for quite a number of years. The systems are well beyond the requirements of these countries over the life of the equipment involved and consequently, I really believe that these systems are more than adequate. They are very advanced systems. In some cases, we go beyond the so-called China Green Line in terms of transmission speed for—for fiber optic systems and microwave systems.

Our allies said you need to go at least to the China Green Line. We've gone beyond that. We—when you have a system at transmission speed of 156 megabytes per second, you can add something called Sonet—it's advanced networking. It gives additional capacity. It's more efficient, reliable and faster.

We provided packet switching as part of our proposal. This will enable countries in Eastern Europe, and including the Soviet Union, to transmit financial data and to set up banking systems. These countries already have access to very good digital switches. The basic fiber optic cable has been decontrolled. We think it's a very good, defensible proposal.

I would note that Joan McEntee said in the course of her written statement that we propose the decontrol of basic land mobile systems, including analog, cellular telephone systems and the decontrol of satellite ground stations. That applies to the Soviet Union, as well as to certain Eastern European destinations.

But if you look at just what we're offering to countries in Eastern Europe that adopt safeguards, these are very advanced systems.

The CHAIRMAN. Well, I think that you're making a telling point in the sense that we still have to see how the situation unfolds come June the 6th or 8th, but there is some—I just got back from Eastern Europe, and I know you did. We visited both in Poland and in Czechoslovakia and in Yugoslavia and met with the Parlimentarians and their Premieres and everybody else that was doing anything in science and technology in those respective countries.

Of course, the major issue was what level of technology will be allowed to them. They came back and—on the answer to your question—for example, in this one report, IBM officials said that modernizing the banking systems in Eastern Europe, something the Bush Administration said is needed to allow those countries to switch to a market-oriented economy, requires 10 times the computing power that the new U.S. export controls allow. I don't know whether that relates yet or not, but let me finish the point, the observation.

I think that our—I don't know why we would expect them to accept a lesser level of quality if I'm going to pay for it, than is available on the open marketplace. That is one thing that they—that's one point they brought up to us. They say, "Look, if we're going to spend our hard—our hard currency and our balance of funding available, we want to buy the best that is available on the marketplace. We'd like to buy from the United States, but from what we see with the United States, it's tougher to deal with the United States than it is to deal with some of the other countries."

Then we talked about COCOM and we brought back the point, well, that doesn't sound—make any sense because if COCOM is the team working together, then you shouldn't be able to get any higher level of technology from European countries or Japan than you can get from the United States and they just sat there and smiled. So, needless to say, I know that Members of Congress, including myself and many members of this committee and other committees, are terribly concerned with this entire issue in a much broader aspect than what we're talking about.

But in—I want to paint a picture for you, which I think is important. When we visited in East Germany and we talked to Minister Budig, who was then the Minister for Science and Technology and Economics—he no longer is there, although he was a Christian Democrat, as I understand it—they got somebody else in there—well, on their list of items that was top drawer to them, the first issue was energy issues, having to do with all kinds of energy-type equipment, nuclear generators and so forth.

The second was telecommunications. That was their most important second issue. Now, I'm wondering how we're going to work this out.

Between—as the situation in unification, or if you want to say, my judgment, unification of Germany takes place, what we're going to be running into right now is here you have this situation in Eastern Germany with a level of technology available to them and the situation in Western Germany as part of COCOM. And it's going to be very interesting to see what's presented in June as to determine how those two relationships are going to work out.

It seems totally ludicrous to me to have one system of communications, in telecommunications in West Germany, have a united Germany, have an entirely different system in East Germany, and then one comes back and says, "Well, because of the peculiar situation between this unification of East and West Germany, then in that instance, yes, we may go ahead with a much more sophisticated system with them or the Germans will put that in, but not the other Eastern countries."

So we're concerned about that. We're concerned about how that sifts through and where that comes out. And I think that that's legitimate.

The Bonn Government has told American officials that once Germany is unified, companies in the former East German nation will be allowed to honor existing contracts for the sale of computers and machine tools to the Soviet Union, even if the shipments violate allied export control restrictions.

So these are the kinds of things that are beginning to register and we're leading to a broader point here today, as far as this committee is concerned and where we go from here.

So I would—would like to hear a little bit from you what you see in that, particularly the relation—I think that the East/West German issue is a major trigger to how we handle the whole COCOM issue as far as Eastern Europe and the Soviet Union is concerned.

Would you like to comment on that a little bit?

Ambassador WENDT. Yes, sir, I would.

Why don't I start with the last point first—

The CHAIRMAN. Okay.

Ambassador WENDT. —dealing with the German Democratic Republic.

That's a special situation and it is being handled as such. We are looking forward to the time when there will be full unification of the—of the two Germanys. No one knows exactly how quickly that process is going to unfold, but my guess would be probably more quickly than we might have anticipated.

The CHAIRMAN. I agree.

Ambassador WENDT. The question is, what happens in the meantime? In early July, the border is going to disappear. From an economic point of view, it has virtually disappeared already. There will be full economic and monetary union between the two Germanys.

We have had discussions with the Government of the Federal Republic in Bonn. We've also had discussions with the GDR authorities in East Berlin, and the government in Bonn has proposed the establishment of an interim export control arrangement for the GDR that would substantially liberalize exports to the GDR during this transition period to full political unification.

The arrangement would provide for a commitment from the German Democratic Republic to protect COCOM-controlled technology against unauthorized export. Without my going into a lot of detail, Mr. Chairman, I think what is happening here is there is a recognition that as a practical matter, it is going to be very difficult, if not impossible, to control all but a very, very small number of items between the two Germanys during this transition period. We understand that. The German authorities know that we understand that and I believe it's their intention to present a proposal to all the COCOM partners to deal with the situation with the expectation that it would be approved in early June at the COCOM high-level meeting.

I think the concerns that you mention will be fully allayed as a result of this proposal, which we would expect to gain the approval of all the member countries of COCOM. It simply recognizes that—that the GDR is a special case.

The CHAIRMAN. Can you hold on that point? The West Germans told us when we visited—they said to you folks, "Well, why—I notice that you're visiting in Poland"—they knew our agenda—"and you're going to Czechoslovakia and you're going to Yugoslavia, and I hope you're not really considering a Marshall Plan, West Germans, GDR." They said to us, "Hope you're not considering a Marshall Plan, even an economic Marshall Plan, because we feel

that we, the West Germans, are capable of handling the economic needs of Eastern Europe and we can handle it that way."

What that lead us to believe is you come back and say the following, and in fair play to the Western Germans, "Okay, fine, we are strong enough economically to really take over the marketplace as far as Eastern Europe is concerned and certainly where East Germany is involved." Their attitude was that they didn't need us and so forth, so, therefore, what this committee and other committees are concerned about is that whatever those ground rules are, that the ground rules are fair to our business and industry from the United States in science and technology.

Which leads me to believe you say that we're going to treat them as a special case and how are the others going to look at that as far as the rest of Poland is concerned and Czechoslovakia and—or does it matter?

Ambassador WENDT. Well, first of all, in terms of competition, whatever arrangements are made involving easing the controls to East Germany, those arrangements will apply to all member countries of COCOM. Whatever the West Germans can ship to the GDR, we will be able to ship as well. The rules will apply the same to all countries.

It's certainly fair to say that those rules are going to be a lot more liberal in this case because there isn't going to be a border between the two Germanys. So, as a practical matter, it's really just not going to be possible to exercise much in the way of controls; so the issue of concern to us is how are we going to make sure that the items that flow into the GDR from West Germany or from the United States or from any other COCOM country are protected in the GDR and discussions—and that the proposal that the Federal Republic is going to present to its partners deals, among other things, with precisely that issue, establishing an effective control regime in the GDR.

As far as the other countries in Eastern Europe are concerned, they are different because—

The CHAIRMAN. Why?

Ambassador WENDT. Why?

The CHAIRMAN. Yes.

Ambassador WENDT. Well, because the two Germanys are about to be unified. East Germany—

The CHAIRMAN. But if the gentleman would yield, aren't we coming back and saying because of the miracles that have taken place in the last six or seven months and because they're to be reunified, that, therefore, they get special treatment, and that puzzles me a bit when I look to see what happened in World War II in both Poland and in Hungary and in Yugoslavia and Czechoslovakia—how we treat them differently.

Automatically, I feel a tingle start to go up my legs. I'm serious. Sitting here. It just doesn't seem to me to be just. I mean, why should we just settle out on a—I don't mean—I'm going to be the Devil's advocate here a little bit. Why should we just settle out on Eastern Germany for that unification aspect of it because they're Germans or for whatever the reason may be, and then we come back and say to ourselves, but the others are a different case. That's a little hard to chew, don't you think, a little bit?

Ambassador WENDT. Mr. Chairman—

The CHAIRMAN. In fairness.

Ambassador WENDT. I understand your point. It's just that if East Germany is going to be unified with West Germany, then it really is no longer going to be a proscribed destination.

The CHAIRMAN. I'm not even arguing with you on that. I can rationalize—

Ambassador WENDT. Yes.

The CHAIRMAN. —I'm your age, too, so I know what's going on in the world, believe me. So let me point out to you, though, very interesting things are happening from a science, space and technology point of view.

In other words, do we use American jet fighters? Do we use the MiG 29s? Are we going to have a joint situation between East Germany and West Germany as far as the military aspect is concerned? What's going to happen with the removal of troops and people and support facilities from East Germany as it relates to West Germany and so forth, so we're well aware of all of that.

Let me tell you where we're really coming from. We're going to meet with 17 Soviet scientists this afternoon and we're going to be talking about fusion energy. Now, fusion energy—the Soviets are ahead of us on Tokamak and other areas in that particular regime. They're ahead of us on that. We know that, and we're going to be talking about that whole process of fusion energy as it relates internationally, including the Soviet Union and the United States, and what do we do?

Now, that's of the highest advanced technology we can deal with in the fusion aspect of energy. Do we deal with them? Is that opposed to COCOM? Do we exchange the technical information? Do we use their information? What do we do? Question number one.

Question number two, super conductor supercollider, a 7.5-, $8 billion program. We're moving internationally with Japan and other countries on that basis.

The question comes back and says in science, space and technology, the most advanced relationship to the—to matter, in the reaction of matter, how do we deal with them? Are they on the COCOM list because we're no longer talking about a mechanical piece of thing; we're talking about the high advanced technology as we now start to generate it into the new product categories that are going to come throughout the world.

So when we're looking at—somebody said, why would Science, Space and Technology be holding another hearing, as we did two years ago or three years ago, on COCOM, when it really is not in their purview, it is in the purview of the Foreign Affairs Committee, International Relations Committee, and we have no quarrel with that committee, but the question is, are we thinking about in a broader aspect of COCOM, the interrelationship of the control technology and what it means to minds and transport of information and how we deal with the people that we're going to bring into this country to work on joint programs?

The space station is another example that we're dealing with, so we're trying to get from you an overview—we're not arguing with you—an overview of where you're coming from. I happen to believe, when Webster sets up, after much negotiation, a discussion, a

special section that starts to talk about the economics of the future, the dynamics of technology as it relates to national security, that was a monumental step forward in the intelligence community, from my point of view. I think it was a good step forward.

Having said that, let's go back to your response.

Ambassador WENDT. Yes.

Mr. Chairman, let me go back to your question about countries in Eastern Europe and the distinction between those countries and East Germany.

If you note in our prepared statements, we talk about countries in transition to removal from the list of proscribed destinations. What we're trying to do is narrow down the number of controlled items for those countries as much as possible. We think our proposals will do that. This is why we have suggested to our COCOM partners that we seek a way to grant even more generous treatment to countries in Eastern Europe that are following a democratic path than we grant to the remaining control destinations.

And we have had talks with those countries already, and we're going to pursue those talks further. We're encouraging them to adopt safeguards. We envisage a time when those countries, like the GDR, although for different reasons, will no longer even be on the proscribed list. We're seeking, by every possible way, consistent with our national security, to grant them generous treatment, and I think when you analyze the details of our proposals, you would agree with us that we are going to be able to grant them very generous treatment.

I need to add, also, that COCOM is a very flexible instrument. Even if an item is controlled, that doesn't mean it can't go to one of these countries. We're suggesting a very high threshold of technology that would be available to these countries and, if there's something in that remaining very small number of controlled items that they have a legitimate need for a civilian end use, it comes into COCOM and we can let it go. It doesn't mean that that item is prohibited. It simply means that it has to come into COCOM and we look at it and if it's all right, it can go.

We did that even before the comprehensive proposal. We approved a set of advanced computers for the Hungarian Central Bank, even though they were way up in the controlled area because they were overhauling their tax system, and it was a World Bank-sponsored project and we had no real concerns about it. So COCOM is a flexible instrument and we intend to apply it that way.

So I really think we can allay your concerns about not enough advanced items being available for these countries in Eastern Europe.

The CHAIRMAN. Let me ask you two more questions. One is the—do you—for example, here's a piece of information that we're going to be talking about a little later. Currently, the United States sells one million in—approximately one million in machine tools to the Soviet Union, compared to 500 million by West Germany and 125 million by Japan. Now, we're just wondering how much of the disparity, the current disparity, is due to export control regulations and how much is due to the competitiveness of industry? That glared out at us. We said to ourselves, that's strange to us.

Now, why would you be—if we're all playing with the same set of rules, unless we're terribly inefficient or whatever in our machine tool industry, it seems extraordinary to me that we should be moving only a million dollars worth of machine tools from the Soviet Union, where West Germany is 500 million. That puzzles us.

Have you got any thought process on it? Do we feel we're playing with a full deck as far as the rest of the other 16 members are concerned, to be honest with you? That's what we're wondering.

Ambassador WENDT. Mr. Chairman, this is a very legitimate concern. I am not an expert on the state of the U.S. machine tool industry. I think they have gone through some difficult periods, but I think, also, they're coming back very nicely.

The rules apply to all member countries in COCOM equally and the new proposals that we have on the table, which would decontrol altogether to all destinations a very large number of machine tools that are commonly used in industry and in civilian capacities, we've gone very, very far in this direction. This should certainly provide opportunities to the U.S. machine tool industry to compete.

We're very concerned about a level playing field and I—I don't think there is any obstacle that has anything to do with COCOM to the U.S. machine tool industry competing fairly for these markets, and we hope the new proposals will facilitate that kind of competition.

The CHAIRMAN. We hope so, too, but if that—if that observation is correct, then that means that we're doing a very poor job in our machine tool industry, it would seem to me. Something's got to be keeping us from being competitive.

Ambassador WENDT. It may well be that our machine tool industry hasn't really focused on those particular markets, but I don't know. We would have to investigate that further and talk to the machine tool industry to try to account for these figures.

Ms. MCENTEE. Mr. Chairman, can I—

The CHAIRMAN. Yes, sure.

Ms. MCENTEE. Can I just add something, too?

As far as the industry is concerned, I think it is hard to, as Allan mentioned, and I would agree with everything he said, I think it's also hard to come up with an exact reason why those figures are so disparate, but I think we do have to make the argument that the machine tool industry, as everyone knows, has suffered historically from unfair competition and so, in addition to the export control area, we have been pressing these countries, using my other hat for a moment, as far as what the other side of what Commerce does is international trade administration on the unfair competition—I think that we have been pressing very hard from—with the Japanese, especially, as far as unfair competition is concerned, so on the export control side, as Ambassador Wendt mentioned, we would expect that as these controls are loosened, we would encourage the level playing field for the machine tool industry, which we feel is absolutely essential.

The CHAIRMAN. I want to make one other observation and then I'm going to defer to the distinguished gentleman from Alabama, the reason that the machine tool issue comes to mind to us and why we point to the machine tool issue is because that is a fundamental basic technology used to produce other machines and equip-

ment and goods. And that says something very, very important to us is what it amounts to, just as important, as the Ambassador says, the level of microchips we're using for different types of telecommunication systems.

Ms. MCENTEE. We would not only agree with that, but as you will recall, one of those areas that we're—that was specifically designated was not only telecommunications and computers, but indeed, machine tools—

The CHAIRMAN. Right.

Ms. MCENTEE. —because we do believe it is absolutely so essential—

The CHAIRMAN. We're waiting breathlessly to see what you're going to propose come June the 6th.

The Chair recognizes the gentleman from Alabama.

Mr. BROWDER. Thank you, Mr. Chairman.

I don't have any criticism of anything specific that's been said this morning, Mr. Chairman, but I would like to ask the panel to expand some of their comments in a few areas.

Mr. Wendt, you talk about a complete overhaul of the COCOM system. How long will it take to negotiate a complete overhaul of the system?

Ambassador WENDT. We're going to have a high-level meeting of COCOM countries the first week in June. We hope to reach agreement at that meeting on the basic elements of a complete modernization of COCOM.

Now, you notice that our proposal talks about a core list. We expect that core list to be agreed and adopted by the end of 1990, but we don't want to wait until that time in order to get the benefits of immediate decontrol of a large number of items that we believe no longer need to be controlled, either because they're no longer strategically critical or because they are so widely available, they can't be controlled anyway.

That's why our proposal calls for a number of other steps which we expect to see agreed early in June and that could go into effect almost immediately, just as soon as we can—we can get the paperwork done and into COCOM and agreed, and that's a matter of just a few weeks.

So this is all on a very fast track. We don't want to wait for the adoption of the core list. We don't even want to wait until the end of 1990. That's why we're pressing ahead for immediate decontrol of approximately one-third of all the items and then decontrol to the China Green Line for a number of others and then really a large measure of decontrol in these key areas of machine tools, telecommunications and computers, which account for the bulk of the cases that are brought into COCOM in the first place.

So we think there'll be a quick payoff in COCOM as a result of the proposals we have put forward.

Mr. BROWDER. You say there'll be a quick payoff in some of the ones that you've put up front. This was—your proposal was approved by the President just a few days ago—

Ambassador WENDT. Yes, sir.

Mr. BROWDER. —a couple of weeks ago. Did you discuss any kind of time frame work for, say, the bulk of the changes that you'll recommend?

Ambassador WENDT. Except for the core list, fleshed out in all of its details, and that's a complicated exercise because it involves rewriting all the controls from scratch without reference to the existing controls—except for that part of our proposal, we expect to reach agreement on all of these items in early June, in—well, the meeting's going to take place on the 6th and 7th of June. And we're still discussing some of the details of the priority areas in working groups in COCOM. There's one meeting this week on computers, for example. We hope to reach complete agreement on that issue even before the high-level meeting in COCOM, but the high-level meeting would endorse the work that's been done in these working groups and we hope it will result in approval of a complete package, including the basic core list, the basic entries in the core list, but then we have to fill in the sub items under the basic categories and include the parameters and that can't be done between now and June.

But our goal there is the end of 1990.

Mr. BROWDER. You mentioned in your testimony preferential treatment. Given the longstanding cooperation between the intelligence agencies of the Soviet Union and Eastern Europe, is it really possible to differentiate between the two in terms of export controls?

Ambassador WENDT. You cannot eliminate all risk, and we wouldn't suggest for a moment that you could. But we believe that you can reduce that risk substantially by getting these countries to agree to safeguard arrangements on the technology and we've already had preliminary discussions with the governments of three of those countries, discussions which we are going to pursue expeditiously with a view to getting control systems agreed upon.

The idea is to get a basic commitment from these governments to control the technologies and the items that we're going to make available to them and when we have that commitment, we think it's going to create a set of circumstances in which they will not find it in their interest to allow diversions, lest they jeopardize their future access.

It's not a panacea, but it substantially reduces the risk to a level that we think is acceptable and that justifies the really rather bold steps we're taking in liberalizing the goods and technologies available to these countries.

Mr. BROWDER. Has there been any difference of opinion regarding the acceptability of this risk?

Ambassador WENDT. Some of our COCOM partners are a bit skeptical about the effectiveness of safeguards, and that discussion continues in COCOM. What these countries argued was, the best thing to do is decontrol to a rather high level and decontrol on the basis of the criticality of the items and whether or not they were so widely available you couldn't control them anyway.

So, when we first made our proposal for differentiation, they were skeptical because they didn't see enough liberalization of the controls, but since then, we have expanded our proposals in all these areas and we now have a much higher threshold and so what we're really talking about is how to grant even more favorable treatment to countries that we see eventually as no longer being proscribed destinations above this new Green Line.

That's our approach and we hope to be able to convince our partners that that is a reasonable approach that takes into account the differences between some countries in Eastern Europe and the Soviet Union, which retains a formidable military establishment, still capable of threatening us, whereas we see no such threat emanating from these countries in Eastern Europe, where the problem really is one of safeguarding the items against diversion.

Mr. BROWDER. What are other nations besides the United States doing to further the science and technology development of Eastern Europe?

Ambassador WENDT. Well, as far as COCOM is concerned, if we are able to agree, as we hope, in early June, to a comprehensive modernization of COCOM, I think our expectation is that this will generally facilitate scientific cooperation with countries in Eastern Europe and the Soviet Union. It will do that for all of us because we will have a new set of rules that we will all be committed to, all 17 nations in COCOM.

Mr. BROWDER. But is there anything outside of COCOM?

Ambassador WENDT. There are a number of other areas that are—that present opportunities for scientific cooperation, yes. I don't happen to have expertise in those areas, but if you'd like to pursue them, one of my colleagues here is more knowledgeable than I am, John Boright, from our Office of Environment and Scientific Affairs, and he could perhaps give you greater detail on specific areas of cooperation.

Mr. BROWDER. I think if he could submit that to the committee in writing—I have one other question, Mr. Chairman.

Ms. McEntee, could you estimate the size of the potential market in Eastern Europe that will be freed up by liberalization?

Ms. MCENTEE. We really—at this point, we really don't have statistics that would address that question, hard statistics that address that question. However, the figure that we are using is the U.S. proposal consists of immediate steps which would eliminate the need for approximately 50 percent of the 81,000 licenses that were received by the Department of Commerce last year and that would have represented approximately $48 billion in U.S. exports last year.

So far, that is as close to an approximation as we have been able to determine.

Mr. BROWDER. Fifty percent and—

Ms. MCENTEE. Of the 81,000 licenses, that's correct.

Mr. BROWDER. Do you have a dollar—

Ms. MCENTEE. Well, we're talking about a potential $48 billion. Now, again, that—I caution that is an approximate figure.

Mr. BROWDER. I guess I'm a little surprised that you don't have anything stronger than that.

Ms. MCENTEE. Well, Congressman, it's hard to anticipate when what we're doing is basing it on anticipated licenses that come in. That is, when someone submits a license, it is for a particular approximation of amount of trade that they actually would do.

Until that's an actual completed fact, we don't know exactly how much trade really was accomplished, so that's why it's an approximation.

Mr. BROWDER. Looking at the current situation with some of these countries, how are they going to pay for these goods?

The CHAIRMAN. We'll lend them the money.

Ms. MCENTEE. Well, that—that, I understand, is a real concern for them. It is something that they are wrestling with right now and there are certain allies, European allies and the United States Government, that is trying to help in that regard.

Mr. BROWDER. I think Mr. Wendt has a comment that—

Ambassador WENDT. I might just add, Congressman, that this is an issue that we are discussing with our COCOM partners and we've tried to work into our proposals provision, for example, of assembly. A specific case, we proposed to consider favorably in COCOM the assembly through joint ventures of digital switches in the telecommunications field. This will help make a project commercially more viable, rather than just expecting the countries in question to buy the hardware when they don't really have the money.

Ms. MCENTEE. However, we are not discussing the funding question, per se, within COCOM.

Mr. BROWDER. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank the gentleman from Alabama.

The Chair recognizes the distinguished gentleman from California, Mr. Packard.

Mr. PACKARD. Thank you, Mr. Chairman.

Pleased to have you here as witnesses this morning. Following up on the question that was just asked relative to paying and recognizing that the commission is not really addressing that at this point, but at the same time, I think it is important. Are there—will there be considerations of the funding mechanisms that will go along with the purchasing of new technology that heretofore may not have been available to these countries?

Ms. MCENTEE. Well, aside from the aspect that was just mentioned, the ability to make it easier for joint venture commercial partnerships within the COCOM community, that would be the realm of how COCOM would perhaps tangentially address the issue. The actual funding of the—the items or technologies that we're talking about today, as far as decontrol, has not been the subject of the COCOM consideration.

As everyone is well aware, there are proposals, funding proposals, in various governments to assist in the technological acquiring by these countries from a variety of different—of the European, Japanese and U.S. allies.

Mr. PACKARD. Is there any concern or consideration being given for American foreign aid that will—and has already been appropriated for some of these countries, that it might go to purchase foreign technologies rather than come back to assist in our own technology exchange in exchange of equipment? Is there any interest or any discussion relative to how to manage that so that foreign aid that comes out of this country could be targeted for products that would be marketed into those countries from the United States?

Do you understand my point?

Ms. MCENTEE. Whether there's a targeting aspect to whatever fund's made available? Congressman, I don't—

Mr. PACKARD. I think the concern I would have, and certainly one concern I would have is if all of the money that comes out of this government in terms of foreign aid, if it would be earmarked for—by those countries to purchase technology from Japan, one of our major competitors, or from even West Germany, which will have, I think, a corner on the marketplace from the beginning, and I would be interested to know if there's any thought given to the huge amounts of foreign aid that'll be coming from this country to assist those governments in building up their infrastructure and technology base, but it would not come back to bless our own companies within the United States.

I'm wondering if there's any consideration of that?

Ms. MCENTEE. To tell you the truth, you probably would be better off directing that question to the trade officials who are working in the area. Whether there is such a provision, quite frankly, and this is a personal statement, I know at one point, there was a discussion and I believe it was generated from this side of Pennsylvania Avenue along those lines. Whether or not that's part of the funding proposal as far as our government is concerned, I am not aware.

I don't think so, but I could be mistaken.

Mr. PACKARD. I certainly see the gentleman who preceded me's point and that is that these countries may not have the money to buy the technology and the money will come from some source and the source very well—at least a large portion of the source, could be the United States Government and taxpayers. That being the case, I think we ought not overlook the problem that could exist where that money could flow to foreign interests and businesses, rather than back to our own.

Let me carry that just a little bit further, if I may. Do you—well, let me proceed. I returned from the Eastern Bloc countries in January, a rather extended trip there that was very valuable and important. My interest was technology exchange.

As I visited there and observed the strong effort and movement and interest in unifying the two Germanys, I could readily see, and I think most of my colleagues could, that West Germany is certainly poised to capture the bulk, or certainly in a preferred position to capture that marketplace as it emerges.

Is it—do we anticipate a problem regarding the timing of the relaxing of COCOM restrictions, restructuring COCOM and maybe developing core lists, et cetera—is the timing going to be such that our companies, the U.S. companies that are interested in going into joint ventures and capital infusion into those countries, that they could do so and still compete or will they be behind the curve because of the timing of the COCOM processing?

Ambassador WENDT. Congressman, I don't know of any reason why the timing would put any American firms at a commercial disadvantage. We're going to implement the changes just as soon as we can and when they are implemented, the opportunities will be there for the firms of all COCOM-member countries. And we're very conscious of the need to ensure fair conditions of competition.

Indeed, I might add that with regard to enforcement—we've talked a lot here this morning about liberalization of the controls, but we're also concerned that countries enforce what remains controlled and there we're seeking agreement among our COCOM partners to implement a common standard so that we would all be enforcing the controlled goods and technologies to the same extent. If there's laxity in some countries and really vigorous enforcement in others, that can raise questions of fair competitions.

We're very conscious of the need to do that, but no, there's nothing in the timing of our proposals that should adversely affect the interests of U.S. firms.

Ms. McENTEE. Congressman, if I might just add, since Commerce has the licensing responsibility for licensing many of these areas that we're talking about, we intend—even to put it more positively, to be able to take advantage of the time that we have to plan for the probability that these changes will occur and you have a processing in place so that we will be able to assure that our companies hit the ground running as soon as there is COCOM approval.

Mr. PACKARD. One of the problems that our companies struggle with here is the maze and the amount of hoops and red tape that they have to go through to get licensing and a variety of other permits that would ultimately allow them to do business with Eastern Bloc countries.

That, in and of itself, can delay and can treat some competitive disadvantages. Is there any thought or has there been any thought given to combining and facilitating and streamlining the processing of all of these things that deal with foreign trade, American export controls system as a whole, does it—and that includes COCOM, but certainly it's not only COCOM—is there thought—I know Senator Garn proposed something that would somewhat pull it all under one umbrella and allow companies to deal much more quickly and perhaps easier in going through all the hoops?

What is—what is your thinking on that, please?

Ms. McENTEE. Well, as you said, there is, obviously, the legislation from Senator Garn. There's also legislation that's before Mr. Gejdenson's committee which addresses the question of the streamlining of the interagency process. As of now, the—the process, though cumbersome at times, works fairly well, and the administration has taken the position of responding that for this time, while we are undergoing such massive changes, as far as looking at the entire list, not necessarily the process question, but the actual decontrolling of many of these items, that the energies and resources should be focused on the extension of the current legislation which provides for the continuation of the current situation and delineation of authority.

However, as I said, I would like to return to what we're talking about as far as the processing of some of—as the result of some of these new decontrolled proposals that we have talked about here today. I think that you will see a very streamlined process after there is the approval by COCOM and I think that the—the burden, as far as industry, will be substantially lessened.

I think that we have agreement from my colleagues in the Defense Department and the State Department to see if we can't work together, as I mentioned, between now and when we want to

be able to afford our companies the quickest, fastest processing time available. So I think that with the new decontrolled proposal, you will also see, hopefully, a streamlined processing proposal that accompanies those proposals.

Mr. PACKARD. I'm sure that will be welcomed by the industry.

One last question if I may, Mr. Chairman, there are some companies that are now in the—have the problem of being at least perceived to be in violation of COCOM—current COCOM regulations. With the relaxing that may take place in some instances, that will remove the violation if—in other words, the violation took place before the relaxation, but after the new changes, it would not have been a violation.

What is your approach to that where there are companies that are being investigated that after the changes take place, that for which they're being investigated may no longer be a violation? What would be your approach on that? I'd be interested. I have one company in my district that has already approached me and asked what that would be and I thought, well, this would be a good time to ask what your approach would be on that.

Ms. MCENTEE. Congressman, without knowing the details, it's difficult—

Mr. PACKARD. I don't want—

Ms. MCENTEE. —and this is—we're sort of guessing here, but it would appear, without knowing the actual facts, that if an item is controlled at the time a company shipped it, there is still a violation. You know, I think that's a matter of law as much as it is an administrative interpretation. So without knowing the facts, I would say that probably would be the response that—the only response that I could give.

As long as it's controlled and there was a violation as far as a shipment, then there still is a violation.

Mr. PACKARD. Thank you, Mr. Chairman.

The CHAIRMAN. I thank the distinguished gentleman from California.

The gentleman from Maryland, Mr. McMillen.

Mr. MCMILLEN. Thank you, Mr. Chairman.

I have to go to another mark-up, but I was curious just to ask you some questions about space cooperation. If Congress repealed existing legislation that prohibits the launch of U.S. satellites on Chinese or Soviet launch vehicles, would such launches be allowed under current export controls?

Ambassador WENDT. Congressman, as you know, the previous administration decided that launches on Chinese launch vehicles would be permissible as long as certain safeguards in trade and liability agreements were reached. Those agreements were reached and the PRC obtained contracts to launch three U.S.-made satellites.

One of those satellites has already been launched. That was ASIASAT. They received a complete waiver in February, prior to the passage of the Foreign Relations Authorization Act, which contained a sanction against the export of satellites.

A waiver for AUSSAT, which is scheduled to be launched in 1991, is under consideration. The current legislation does provide for a national interest waiver and President Bush has exercised

that authority, as I said, in the case of ASIASAT, which was launched in April.

With regard to the Soviet Union, we have stated that we do not believe that the critical technology in a whole satellite could be adequately protected for launch by the Soviet Union. We are not confident that we could create a black box that reduces the risk to acceptable levels. That's our judgment; that's not necessarily a collective judgment in COCOM.

Mr. MCMILLEN. May I interject there? Was that judgment made in the case of China?

Ambassador WENDT. The judgment was made in the case of China that we could permit such a launch.

Mr. MCMILLEN. But the black box could be—you could limit just the black box information needed to launch the payload. In fact, there could be that limitation. In the case of China, wasn't that judgment made?

Ambassador WENDT. The judgment was made that all of the various concerns we had with regard to technology transfer and trade and liability concerns—those could be handled and, indeed, we went ahead. But we haven't reached that judgment with regard to the Soviet Union. We're not confident that we can reduce the risk to an acceptable level.

The CHAIRMAN. Will the gentleman from—

Mr. MCMILLEN. Let me get to the bottom line—

The CHAIRMAN. sure.

Mr. MCMILLEN. Is that a political judgment or a technical judgment?

Ambassador WENDT. Yes. This is a policy-level judgment, but it's—

Mr. MCMILLEN. Is it a political judgment or a technical judgment? I didn't—

Ambassador WENDT. No, it's a technical judgment. It's based on strategic concerns.

The CHAIRMAN. Will the gentleman yield?

Mr. MCMILLEN. Yes.

The CHAIRMAN. You know, please, that's a political judgment. I don't mean to—to dissuade the distinguished Ambassador, but let me tell you something. If this country can put together a process which they did very well in the launching of the Long March rocket and the ASIASAT and they can do it in China, and make no mistake, they can also do it in the Soviet Union. So from this committee's point of view, I think we know a little bit more about the technology involved than some of the people in the administration, in fair play, I'd like to say that.

But I'd just like to get on the record that we don't accept the point of view that that's a technical judgment. We accept that as being a political judgment.

The gentleman is recognized.

Mr. MCMILLEN. Just to add a thought to that, if it was technically possible for the Long March with the Chinese, it's hard for me to understand how it cannot be technically possible with the Soviet Union. The same criteria ought to exist or vice versa, that, in fact, if it—if you cannot develop and maintain the integrity of this information to the Soviet Union, certainly you can't with the Chinese.

And so, it begs whether there is another criteria and I do think there is some political criteria that are entering into this, but—

Ambassador WENDT. Well, I can say that it's an issue that continues to be addressed at the policy level and I'm sure we haven't heard the last word on it.

The CHAIRMAN. Well, if the gentleman would yield one more minute—

Mr. MCMILLEN. Yes, sir.

The CHAIRMAN. —we also, and I don't want to belabor this because we're getting a little bit afield from where we're at, but maybe yes, maybe no. The committee is very, very well aware of the—not only the Chinese situation—we're thinking about the Australian situation in the Cape York program and, you know, whether we use the—what is the name of that rocket—the Zenith rocket of the Soviets to launch satellites from there and whether or not we have joint programs—we're working on it. We're going to be talking with, I said to you today, 17 different scientists and people who head up that particular area.

I think we—if the gentleman would yield further—I think where we're coming from, it's interesting to me to hear the conversation and I mean it with the greatest of constructive and respect for everybody that's here is that by the wave of a magic wand, and by people standing in—400,000 or whatever deep in the Square, we have a new government. It's no longer communist; it's now something else. That's not really quite true in a couple of countries. People are retreads and made over.

But as we're dealing with the very same people in the Soviet Union, we seem to take the point of view that they are the communists, so that—it just puzzles me how we go this whole route. I don't want to get into that, but nevertheless, that's part of what the thought process is as far as this committee is concerned, getting to the broader issue, if the gentleman will yield further, in the relationship that this committee, and therefore, the Congress, will take as far as high-level technology's concerned to borne the technology in the first place.

The gentleman from Maryland.

Mr. MCMILLEN. Maybe I can bring this back on track. Let me as a couple of what-if questions that are relational to COCOM.

What if the satellite never entered China or the Soviet Union, but was launched on a Chinese or Soviet launch vehicle from a COCOM country? How would that be—

Ambassador WENDT. Congressman, we would have to look at the specific case. I can't give you a general answer, but what I should say is that a lot of different factors are considered before we make this kind of a decision and it's not an easy decision to make. I'm not saying that there's any magic formula that tells us it's okay for China and it's not okay for the Soviet Union. But behind all of the judgments we make is the notion that, in terms of strategic risk, the Soviet Union is more of a problem than China. That was the basis for the China differential we've had in COCOM since 1985.

So the backdrop is different in each case and admittedly, this does affect our thinking.

Mr. MCMILLEN. There's an interesting permutations, if you carry this thing forward. I mean—and what I was getting at, and I still

have not—have adequately had explained to me is that if you don't permit it for the Soviet Union, but permit it for China, for political considerations, then you get into drawing different kinds of permutations where, you know—it's case by case, that's fine, but there is no overriding policy behind it, and we in Congress are trying to understand what the overriding policy is.

Ambassador WENDT. There is an overriding question of strategic threat. It's for this reason that we're prepared to go much further for certain countries in Eastern Europe than we are right now for the Soviet Union because the strategic situation is different in these two instances, and after all, that's what COCOM is all about, dealing with strategic threat.

That's why we set up the China differential. So that underlines our policy approach in this area.

The CHAIRMAN. Will the gentleman yield just for more—

Mr. MCMILLEN. Yes.

The CHAIRMAN. I want to build on your very same point because I think you're making a good point, although you're talking about rockets. I want to switch a minute to the fusion program.

Again, the fusion energy program, the Soviets are ahead of us. We're going to be meeting with them and we're going to be talking about that today. That's the international ITER program, five to six—how many billions—five billion dollars is that program. There's some very high advanced technology involved there.

And I think what we're coming back and saying that—do we want to deal with the Soviets? Should that be reviewed by COCOM as far as that equipment and material is concerned? Where do we carry out the experimentations? Are they only carried out in the United States or do we ship part of our material over to the Soviet Union to do the work and part of the work in the Soviet Union? Do they ship part of their material here?

Is that—would you consider that on a broad-based policy point of view to be part of COCOM? It's shipping of critical material. In either case.

Ambassador WENDT. If the items are controlled by COCOM, then that would obviously be a consideration. If we wanted to make an exception, we would have to take that case into COCOM and consult with our partners.

I should note here that in some of these programs, we're talking about items that are controlled on the munitions list and our comprehensive proposal, the one we've been describing this morning, really relates only to the industrial list, the commodity control list, and I think it's very important to—

The CHAIRMAN. Differentiate.

Ambassador WENDT. —to keep that distinction in mind.

The CHAIRMAN. That's important.

The gentleman from Maryland.

Mr. MCMILLEN. Just one quick question and a comment to finish up.

Under your modified export controls, would the United States participation in the Australian Cape York space port, which plans to launch Soviet rockets using Australian technicians be allowed?

Ambassador WENDT. Well, the Cape York case involves munitions licenses and, consequently, the comprehensive proposal we've

been talking about here this morning would not affect the prospects for U.S. participation, one way or the other.

Mr. MCMILLEN. Thank you.

The last point that I'd like to make is that I appreciate the Ambassador's comments. I'm just trying to understand the—the strategic implications. I mean, clearly, the Chinese have nuclear weapons. They have the capability to launch those nuclear weapons, yet we have made an administration decision—the administration has made a decision over the objections of many Members of Congress, to launch—to go ahead with the Long March launches, and I just—I just have a hard time understanding that you have drawn a strategic line here that is very blurry, that this member does not completely understand, and that—you know, I hope that we can expand upon this another time.

The CHAIRMAN. I thank the distinguished gentleman from Maryland.

We're now on the vote of the rule for the Head Start bill. Suppose we recess for a couple of minutes, go and vote and come back and the Chair will recognize the distinguished gentleman from North Carolina, Mr. Valentine, when we return.

[Recess.]

The CHAIRMAN. The hearing will reconvene.

The Chair recognizes the distinguished gentleman from North Carolina, Mr. Valentine.

Mr. VALENTINE. Thank you, thank you, Mr. Chairman.

The—I'm sorry I didn't hear all the—got here late and didn't—didn't hear the testimony and so some of what I'm going to say might already have been taken care of or—but I wanted to try to get a thing or two straight, if I could, with you gentlemen.

It seems to me that—

The CHAIRMAN. Ladies and gentlemen.

Mr. VALENTINE. Ladies and gentlemen, excuse me, excuse me.

Ms. MCENTEE. Thank you, Congressman.

Mr. VALENTINE. It seems to me that in this day and time, whether we're talking about research and development, whether—whatever it is that we are concerned about with our friends and "friends" overseas, that it's going to come back sooner or later to the proposition, the idea, the organization, whatever it is being financed by the American people, and I believe that when we—we started with the Marshall Plan, of course, the reason for this massive foreign aid was to keep these countries from becoming communist countries and another reason for it was with the assurance or the expectation that most of what we sent over there in taxpayers' money would be spent in the United States so we'd benefit in the end.

Another excuse was that they're the only democracy that exists in that part of the world. So are we—are we headed in a direction where whatever we do is going to be financed by the American taxpayers or are we attempting to encourage the old entrepreneurial instincts which should exist in Eastern Europe which make it different from most parts of the world and make it easier for these people to come into this country and deal with American business, whether it's research and development or manufacturing or whatever, man-to-man, business-to-business, without the hand stuck out

to the Federal Government to, you know, to back it up or guarantee it and that sort of thing, and with all that in mind, my question is—and I apologize for that, all that, and my question—one of the questions is, there's been criticism recently in the long delays in processing visas from Eastern Bloc scientists to this country.

The New York Times has published an article which says that under this administration, it seems to be more difficult now for scientists to come into the United States before liberalization, so what do you all say about that?

Ambassador WENDT. Congressman, before we issue a visa to, let's say, a Soviet scientist, a number of different parts of the U.S. Government want to have a look at it. That's a fact of life, and you can imagine some of the things they may be interested in. Who is he? What are his professional qualifications? What is his mission? What sorts of things has he been doing before? What kind of scientific data are we talking about? Is it militarily sensitive?

And consequently, the visa may not be issued as quickly as one might hope if it's simply a question of facilitating scientific exchange. What I can say here is that with the changes we have in mind, with the comprehensive transformation of COCOM and modernization of the control list and removal of a lot of items from control, this process should be made easier. It should be facilitated.

Beyond that, I can't really give you specifics on what may be involved in issuing a visa, but I think we have every interest, all of us, in not allowing needless obstacles to be erected to scientific exchange and if there's any way we can streamline that visa-issuing process, taking due account of really serious national security concerns, we should certainly be doing that.

Mr. VALENTINE. Well, I take that criticism also to cover not just the Soviet Union, but the countries in Eastern Europe where we shouldn't have the same problem. I mean, East Germany—

Ambassador WENDT. Well, I—

Mr. VALENTINE. —Czechoslovakia—

Ambassador WENDT. That's a valid—

Mr. VALENTINE. —Poland.

Ambassador WENDT. That's a valid point, but once again, remember these countries are just emerging from a very complicated legacy based on their membership in the Warsaw Pact and we would still have to make sure we know who the people are, whom we're dealing with, but I don't think this should be a problem and if it is a problem, it certainly will be alleviated rapidly.

We've just had discussions with representatives of three countries in Eastern Europe on the subject of safeguards, safeguarding controlled technology and goods and I've never heard of their getting visas being a problem. I mean, I really don't think this should be a problem, and if it is, we'll certainly look at it.

There may always be the exceptional case where somebody coming in has a record that we would want to explore a little more thoroughly so that we make sure we know who he is and what he's doing, but this should not be a problem, and if it is, we'll do something about it.

Mr. VALENTINE. I know that you don't want to talk about funding and a lot of us do, but let me just put one more thing about that before you. The business about foreign aid and that kind of

thing, that seems to be immune from normal conventional everyday politics; that is to say that during the recent past administration, which was regarded as conservative, the amount of money that we were asked to spend for foreign aid continued to go up, up, up, up. Do you—do you know—do you believe that this country is going to be asked ultimately to bear the major financial responsibility for the rehabilitation of Eastern Europe, despite everything that we can do?

Ambassador WENDT. No, sir, I do not. I don't think that's the intention at all. I think what we want to do is remove obstacles to economic development in those countries that no longer can be justified on strategic grounds. We want to facilitate as much as we can. We want to encourage the private sector by every possible means, but we don't intend to finance their development through putting the burden on the U.S. taxpayers.

What we're trying to do here is be a facilitator. We want to encourage the development of entrepreneurial spirit in these countries and remove obstacles that may stand in the way of the development of entrepreneurial activity, and this is why, as far as COCOM is concerned, to bring the discussion back to that point, although COCOM is not in the trade-promotion business, we don't want it to be an unjustified obstacle to trade and economic development in Eastern Europe, and that's why we're taking a really hard, rigorous look at all these controls and asking ourselves, are they really necessary? Is there some critical military interest involved that justifies retaining those controls, and if there isn't, away they go. And that's our approach.

Mr. VALENTINE. Uh-huh.

Ms. MCENTEE. Congressman, if I might just add one thing to that, I totally agree with what Allan just mentioned, and the proposal, I believe, by the—by the United States Government is to provide a very moderate seed money funding approach and, in addition, we're looking at a variety of areas just within the Commerce Department, for example, that would encourage the entrepreneurial aspect to increased technology and business within Eastern Europe. There is—I know, a business—a joint business and economic agreement signed with many of the Eastern European countries and, in addition, there are specific offices to assist those American businesses which, indeed, would like to be active in Eastern Europe that we have established—that is—that is very, very active.

Mr. VALENTINE. I appreciate that. Thank you for that. I might say that it always starts little, like the acorn, and I guess what I was grasping for, searching for, was some feeling that the administration that is—that you are people understand some of these frustrations and want to help put the brakes on this sort of thing. It becomes—you know, we start with a little bit R&D and then we go a step further and before we know it, it's institutionalized.

I—one example that—the ceiling might cave in, but the State of Israel, I support Israel, but I don't think that the Government of the United States should have the financial responsibility that it does at—on and on and on and on and on.

One more question, Mr. Chairman, as a result of recent legislation, there are a number of technical training programs being put in place in Eastern Europe by U.S. public and private agencies.

Government officials in some of these nations have expressed concern to us that some of these programs are poorly run and are structured more for technically backward nations and societies than for Eastern Europe.

Can you describe what the administration is doing to develop effective training programs that fit in this area, in Eastern Europe?

Ambassador WENDT. Congressman, I don't have any information I can offer right now on that subject, but if you have some specifics in mind, we'll be happy to take the question and provide you a written answer.

Mr. VALENTINE. We'll do that. Thank you very much.

Thank you, Mr. Chairman.

The CHAIRMAN. I thank the gentleman from North Carolina. Without objection, we also have some additional questions we would like to submit to you for response.

If there's no further—the Chair recognizes the distinguished gentleman from Pennsylvania.

Mr. WALKER. Thank you, Mr. Chairman.

First of all, I'd ask unanimous consent that an opening statement of mine be—

The CHAIRMAN. With no objection, so ordered.

[The prepared opening statement of Mr. Walker follows:]

HON. ROBERT S. WALKER (R-PA)

OPENING STATEMENT

FULL COMMITTEE HEARING ON

THE EFFECT OF CHANGING EXPORT CONTROLS ON

COOPERATION IN SCIENCE AND TECHNOLOGY

May 16, 1990

I BELIEVE EVERYONE WAS SURPRISED BY THE EVENTS IN EUROPE LAST YEAR.

DEMOCRACY IS PRECIOUS AND FRAGILE, THEREFORE, IT CANNOT BE TAKEN FOR GRANTED. JUST AS AMERICA IS WILLING TO FIGHT FOR FREEDOM, WE MUST BE WILLING TO PROTECT OUR OWN.

AS WE LOOK TO ASSIST THE EASTERN BLOC IN CATCHING UP WITH THE WESTERN WORLD, WE NEED TO ENSURE THAT THE TRANSFER OF SCIENCE AND TECHNOLOGY IS IN THE BEST INTEREST OF BOTH SIDES - EAST AND WEST.

THE PRESIDENT HAS STATED THAT THE COORDINATING COMMITTEE ON MULTILATERAL EXPORT CONTROLS (COCOM) LIST OF CIVILIAN AND MILITARY TECHNOLOGY CONTROLS NEEDS A COMPLETE OVERHAUL. IN FACT, THE ADMINISTRATION'S PROPOSAL IDENTIFIES 30 OUT OF 120 CONTROLLED CATEGORIES FOR COMPLETE ELIMINATION. THAT IS A TWENTY-FIVE PERCENT REDUCTION. SO, THE ADMINISTRATION IS ACTIVE

IN OVERHAULING THE COCOM LIST.

HOWEVER, THE PRESIDENT HAS REASON TO BE CAUTIOUS - IN TIME MAGAZINE, THE APRIL 23RD ISSUE HIGHLIGHTS, "ONE RECENT SOVIET DEFECTOR HAS DISCLOSED THAT THE KGB'S DEPARTMENT T, WHICH SPECIALIZES IN INDUSTRIAL ESPIONAGE, ILLICITLY GATHERED 25,000 TECHNICAL DOCUMENTS AND 4000 PIECES OF MACHINERY FROM 1984 TO 1988."

ADDITIONALLY, IN THE SAME ARTICLE OLIVER REVELL, THE FBI'S ASSOCIATE DEPUTY DIRECTOR IN CHARGE OF INVESTIGATIONS SAYS, "SOVIET INTELLIGENCE IS MORE AGGRESSIVE THAN IT'S BEEN AT ANYTIME IN THE LAST DECADE."

FINALLY, THE DIRECTOR OF THE CIA, WILLIAM WEBSTER STATES, "WE SEE SIGNS THAT THE SOVIETS ARE BEING MORE AGGRESSIVE, MORE ROBUST; THERE ARE MORE PITCHES BEING MADE." FURTHERMORE, HE ADDS THERE IS A GREATER SOVIET EFFORT TO RECRUIT AGENTS IN BOTH THE UNITED STATES AND EUROPE.

HAVING ESTABLISHED THAT AS A BACKDROP, I DO FEEL IT IS IMPORTANT THAT OUR INDUSTRY BE COMPETITIVE WITH OUR ALLIES IN EXPANDING THESE NEW MARKETS. I WANT AMERICAN INDUSTRY TO BE COMPETITIVE. I DO AGREE WITH THE ADMINISTRATION THAT THE COCOM LIST SHOULD BE REVISED. FURTHERMORE, I AGREE THAT THE PRESIDENT HAS THE RIGHT TO BE CONCERNED ABOUT THE LOSS OF ADVANCED TECHNOLOGY THAT COULD BE USED AGAINST US OR OUR ALLIES. THIS IS

A FINE COURSE THAT MUST NAVIGATED VERY CAREFULLY.

AS EVIDENCED BY THE RECENT EVENTS IN LITHUANIA, THE WORLD IS NOT AS FRIENDLY A PLACE AS SOME WOULD LIKE TO BELIEVE.

I AM VERY INTERESTED IN HEARING FROM OUR WITNESSES TODAY, AND LOOK FORWARD TO THEIR TESTIMONIES.

Mr. WALKER. I thank the gentleman.

Just a question—I'm sorry I haven't been here for most of the hearing and this may have been covered, but I—just as a point of clarification, most of the nations, particularly nations like Poland, are still a part of the Warsaw Pact.

As we look toward the whole issue of technology transfer, are we taking steps to assure that those Warsaw Pact commitments do not obligate, then, in some way, to transfer technology that would be harmful, not necessarily because of the trade with Poland, but because it would then get into Soviet hands?

Ambassador WENDT. Yes, we are, Congressman. We're very conscious of the need to ensure that these countries protect goods and technologies that they gain access to as a result of changes in COCOM rules and so far, in our discussions with them—and we've had specific detailed discussions, they have shown themselves to be very cooperative and very anxious to put in place export control systems that would safeguard these goods and technologies.

Mr. WALKER. That's helpful. Thank you very much.

Thank you, Mr. Chairman.

The CHAIRMAN. I thank the distinguished gentleman.

The gentleman from California, Mr. Rohrabacher.

Mr. ROHRABACHER. Mr. Ambassador, perhaps you could let me know—or let this committee know about some examples of situations where our trading—where our allies were trading with these newly freed countries in items that might be providing a security problem for the United States.

Ambassador WENDT. I'm not sure if you have any specific item in mind. If you're talking about breaches of multilaterally agreed rules, whenever we have reason to believe that a firm and a COCOM partner country has supplied an item or a technology in contravention of those rules, we bring that matter to the attention of the authorities of that country very promptly.

Mr. ROHRABACHER. Do you have a couple of examples for us for the type of things that we have to be vigilant about in this time?

Ambassador WENDT. I can't cite any specifics, but we have to be vigilant about everything and anything and we pay a lot of attention to ensuring that every country abides by the rules because if they don't, the system really just isn't viable. We can't have a system in which the controls apply to some countries but not to others.

And whenever there is a problem, we move very quickly to try to deal with it. Sometimes we find that a licensing error may have been committed. It may have been just an honest mistake. Sometimes we'll find we're dealing with a known diverter and we get information on the diversion and we bring it to the attention of the authorities of the country in question, with the expectation that they will pursue the matter, based on their own laws and regulations, and sometimes we find it's a dead end. There can be any number of eventualities.

Mr. ROHRABACHER. Do you think that there's a strategy on the part of the Soviet Union, a specific strategy at this time, in order to use the openings in Eastern Europe as—as a vehicle to obtain technology that they didn't have before or couldn't get their hands on before?

Ambassador WENDT. Congressman, I think we would be deluding ourselves if we supposed that no such effort was being made.

Mr. ROHRABACHER. All right, and one last question. Are—what computer technology is of military significance and what computer technology is simply of benefit to making—making their economies work in Eastern Europe is a major question. Is there a disagreement among our allies as to what level of computer technology is permissible to sell and where do we stand on that?

Ambassador WENDT. We're still discussing that matter with our partners. In fact, there are meetings going on this very week in COCOM specifically on computers. We have put forward a proposal. We're discussing the details with our partners. We hope to reach agreement in the very near future.

Countries may have different views about what is militarily critical and we try to sort out our differences and once we agree, those are the rules, and they apply to everybody.

Mr. ROHRABACHER. I'm looking forward to hearing the results of those meetings that you described. Thank you.

Ambassador WENDT. We'll be happy to provide you with those results.

Mr. ROHRABACHER. Yes, sir.

The CHAIRMAN. The gentleman from Florida, Mr. Lewis.

Mr. LEWIS. Thank you, Mr. Chairman.

Mr. Ambassador, I just returned from a four-day trip to the North Atlantic Assembly and discussing with a number of our parliamentarian colleagues over there. It was very apparent that a majority of them would like to see COCOM disbanded. They feel it has run its course and may not be needed anymore as far as opening the doors with those newer countries, as well as their own, and I recall back the problems we had with the Russian submarines with Norway and with Japan and in our discussions, there was a lot of things that needed to be done to correct those problems so they wouldn't happen again with COCOM.

Now, as we're talking about the liberalization of it, I wonder if you have a backup or a proposal if COCOM is disbanded completely, what do we do as far as protection for the security and integrity—the security of this country in reference to the moving of technical—technology out which could be detrimental? Sort of didn't get all the words right there.

Ambassador WENDT. Congressman, we see no prospect whatsoever of COCOM being disbanded. We have had discussions with all of the partners in COCOM. There is no government in power in any of these countries that advocates the dissolution of COCOM. Quite the contrary, they all believe that it remains essential to our security interests, individually and collectively.

There may have been some opposition parliamentarians in some governments who have said we no longer need COCOM, but those people are not in power and that is not the policy of any of the governments we're dealing with. They do believe that COCOM needs to be modernized in order to be kept on a viable, credible, effective basis, and we believe that as well. That's why the President has put forward a comprehensive proposal to modernize COCOM and establish a new consensus.

Shorter control lists, higher fences around fewer items, and that general approach has been agreed to by all of the partner governments.

Mr. LEWIS. If I may, Mr. Chairman, the question that was discussed in Paris with some of the parliamentarians was the modernization of COCOM and maybe even the elimination of COCOM and come up with another type of organization. If you consider France, West Germany and England not countries of power, then I think we have to do some self-investigating.

Ambassador WENDT. No, sir. Of course—COCOM operates by consensus. There are 17 countries and all the decisions are taken by consensus, but we had a high-level meeting of COCOM countries as recently as October and we had another—

Mr. LEWIS. I'm aware of that.

Ambassador WENDT. —special meeting just last February and there was unanimous agreement, not even a trace of dissent, that COCOM remains essential to our security interests and that it has to be preserved and strengthened, but on a new modernized basis. So I'm not honestly sure which parliamentarians you spoke to—as I said, we know there are opposition parliamentarians in some of these governments who question the need for COCOM, but the governments themselves, the authorities we deal with, do not question the continued need for COCOM.

Mr. LEWIS. Okay. I'll put my faith in you and I hope you're right.

The CHAIRMAN. The Chair wants to thank the witnesses very much for spending this morning with us. I think you've been forthright and direct and we appreciate your being with us and we will submit some additional questions for—which we request a response on.

I thank you very much for being with us this morning.

Ambassador WENDT. Thank you.

The CHAIRMAN. The next panel we have—our next panel of witnesses are from universities and scientific associations. Mr. John Shattuck, Vice President for Government, Community and Public Affairs, Harvard University, Cambridge; Dr. Gerald P. Dinneen, Foreign Secretary of the National Academy of Engineering, Washington, D.C.; and Dr. Robert Park, Executive Director of the Office of Public Affairs, American Physical Society, Washington, D.C.

We want to welcome you all to our committee hearing on COCOM and the Chair would first recognize Mr. John Shattuck, Vice President for Government Affairs for Harvard University.

Dr. Shattuck.

STATEMENTS OF JOHN SHATTUCK, VICE PRESIDENT FOR GOVERNMENT, COMMUNITY AND PUBLIC AFFAIRS, HARVARD UNIVERSITY, WASHINGTON, D.C.; GERALD P. DINNEEN, FOREIGN SECRETARY, NATIONAL ACADEMY OF ENGINEERING, WASHINGTON, D.C.; AND ROBERT PARK, EXECUTIVE DIRECTOR OF THE OFFICE OF PUBLIC AFFAIRS, AMERICAN PHYSICAL SOCIETY, WASHINGTON, D.C.

Mr. SHATTUCK. Thank you very much, Mr. Chairman.

I appreciate the committee's invitation to appear here this morning. I have submitted a lengthy prepared statement, which I will submit for the record, and summarize—

The CHAIRMAN. No objection, so ordered.

Mr. SHATTUCK. Mr. Chairman, I think it's clear to all of us that science and technology are at the heart of all modern industrial economies and that economic and military strength is based on how well a country can translate science and technology into products and processes that contribute to the growth of our economy and our national defense. Over the last period of years, beginning in the mid-1970s, in our country, we've had a system of export controls that you've been discussing with the administration this morning which have been imposed in an effort to protect our own scientific and technological resources.

They were designed, as we know, primarily to stop the flow of science and technology to hostile nations. And I think it's very important and significant at this stage, given all the changes that are going on in the world, that we take stock of how well those controls are working.

The answer, I think for a number of years, is that they have not been working well at all. From the point of view of academic science and technology, and also, I think, from our own domestic industrial developments, there are really three major problems: a reduced scientific and technological communication among scientists that's resulted from many of the control systems that are in place; a slowing of economic innovation in areas of high technology; and a reduced utility and accessibility to the public of scientific research that it has paid for with its tax dollars.

I'd like to just briefly summarize the costs of the export control system that the administration is in the process of revising. I think these costs are well summarized in three reports by the National Academy of Sciences that appeared in 1982, '87 and '88, which I'm sure you, Mr. Chairman, are familiar with, and I hope would be reflected in the record of the hearing.

The economic costs estimated by the National Academy in 1987 were roughly, just in very basic terms, 188,000 jobs and $9 billion a year, but beyond that, substantial lost sales to non-U.S. suppliers by over half the high-technology companies who were surveyed by the National Academy in 1987, and a difficulty in filling high-technology positions in U.S. industry because of restrictions on foreigners. I think it's important to note that in 1987, 40 percent of all doctoral engineers who were needed to fill U.S. engineering jobs at that point were, in fact, foreign citizens.

There are similar costs in terms of the reduced scientific communication that we see, particularly in the academic sphere, and I'll just very briefly summarize those. They are discussed at much greater length in my statement.

Conferences of scientific and engineering societies have had to be restricted to U.S. citizens, even though unclassified papers were presented in a wide variety of technical fields. Classrooms and research laboratories where no classified information was being generated have, in a number of well-documented instances, had to be barred to foreigners from particular countries, particularly Eastern Europe and the Soviet Union, but others as well.

Some student exchanges over the past decade have resulted in requests to universities to keep close tabs on foreign students from the Eastern Bloc and from China. Scientific instrumentation and equipment, particularly in the area of academic super computers, has been a subject of considerable amount of controversy as far as its accessibility to non-U.S. citizens who are on campuses performing unclassified research or engaged in various academic activities, although the National Science Foundation has played a very significant role in trying to eliminate those restrictions.

We've seen a number of categories of scientific and technical research that are now subject to control. We're all familiar, I think, with the area of cryptography, which is a particularly sensitive field, to be sure, but which is now widely regarded as subject to an informal system of export controls. Nuclear energy research is now subject to regulation under the new definition of unclassified nuclear information, which is an outgrowth of the control system, and even a field as open as research on superconductivity, which I'm sure my colleagues will speak more about, has been touched by the control systems. In 1987, there was a White House conference on superconductivity which ironically excluded a number of scientists from overseas, even though the major breakthroughs in the area of superconductivity had been a result of research conducted by non-U.S. citizens.

Finally, and in many ways perhaps most ominously, the issue of information in scientific and technical electronic data bases is subject to control under National Security Decision Directive 145, where all telecommunications and automated information systems are to be closely watched, to the extent that scientific and technical information is contained there.

There are a number of things that can be done and, fortunately, are being done to revise the system so that it is not so costly to our scientific and technical—technological enterprise. The full-scale presidential review that has been announced is certainly a very welcome change and I think the scientific community is very gratified to see that the Bush Administration is proceeding in that direction.

In addition, we think the National Security Council should provide ongoing policy direction to the three agencies on line that have responsibility for the system. It is a vast bureaucracy. The Departments of Defense, Commerce, and State must be coordinated on the part of the NSC and, indeed, the White House is very important. We clearly have to reach agreement with COCOM countries or we will lose COCOM, I think as has clearly been pointed out.

There are a number of regulatory and legislative initiatives that I think also could well be considered by the Congress and by the administration. It would be very useful to review and consider repealing the 1984 DOD Authorization Act provision which provides a basis for so-called sensitive unclassified designation of scientific research that is supported by DOD, i.e., research that is not classified, but is, in fact, in a new category of unclassified, but sensitive, which has been the basis for the interference that I've described before with scientific conferences and other kinds of unclassified scientific communications.

I think a review should be conducted of the National Security Decision Directive 189, which bars currently restrictions on federally funded unclassified research, but then has an additional clause, except as provided in applicable U.S. statutes, which suggests that the export control laws and their regulatory definitions could be used for the restriction of scientific communication.

Finally, I think a review should be made of the National Security Decision Directive 145, to ensure that it is not used to restrict unclassified scientific information in computerized information systems.

Mr. Chairman, at the end of my prepared statement, I address the five questions that you have specifically proposed to each of us and I'll very quickly review those, although I'd be happy at any point that you feel time is of the essence to cease and desist.

You asked what will be the impact of reduced restrictions on the climate of scientific cooperation. I think there's very broad consensus that if the West's export control regime becomes less restrictive in the near future, there's no doubt that the international climate of cooperation in science and technology will improve. This is, indeed, the thrust of all of the National Academy of Sciences' reports that have been put forward. I think we see, particularly in the area of computer developments, the 1988 report of the Academy is extremely important. We see accelerating trends in international software development and the growth of small, high-powered computers which have made much of the computer technology inherently uncontrollable. There is a danger, as the Academy says, that in the computer area, the United States may lock the proverbial barn door after the horse has escaped.

So in this instance, I think the fact that we're considering greatly reduced controls in the area of computer technology is highly welcome and the administration is to be commended.

Your second question regarding the effect of reduced controls on U.S. national security directives and technical regulations, as I referred to before, we think there are—I think there are a number of areas that the Congress and the administration should look at, particularly the defense authorization provision of 1984 that creates sensitive unclassified information categories.

What steps should be taken to increase the flow of Eastern Bloc scientists into the United States? A very important question and I was glad to see that the committee explored that with the administration witnesses. In order to increase the flow of Eastern Bloc scientists and engineers interested in studying and working in the U.S., it's clearly necessary to remove several significant impediments in U.S. immigration law and practice. Impediments, incidentally, that apply to foreign academic and scientific employees across the board, not just Eastern Europe and the Soviet Union.

Among these are substantial delays in the issuance of third-preference visas for academic work in the U.S., delays in issuing labor certification for academic employment, unreasonably strict limitations on the definition of immediate family of academics who seek qualifying otherwise for immigration who may want to bring aging relatives or siblings who are ill with them when they come, and the prohibition against the entry into the country of persons who

have tested HIV-positive, which includes scientists and researchers who seek to attend scientific conferences.

These are a variety of immigration problems all of which, incidentally, are now being addressed by legislation pending before the Congress, which I mention in my testimony.

How can we use scientific cooperation to encourage political change in Eastern Europe? Well, I think the simple answer there is to encourage as much exchange of scientists as we possibly can, particularly the education in this country of Eastern European scientists and engineers. It's no accident that our American higher education system is the system of choice around the world for many foreign academics, and we should encourage them to come here because when they return home, we may, indeed, get an additional dividend in terms of their becoming instruments of change in their own country.

And in that regard, I would recommend that we seek to channel foreign assistance funding into scholarships for Eastern Bloc students to attend American universities.

Finally, Mr. Chairman, you asked what is likely to be the impact of reduced export controls on the competitiveness of U.S. high-technology industries. Here I defer to the panel that will appear following this one, but certainly would refer to the studies that the National Academy of Sciences have done in a number of the technical fields where I think the consensus is clear that if we are to be more competitive in a number of fields, we should not be more restrictive in terms of scientific communication.

I think to put that matter in its most concrete form in concluding, I would say the U.S. was only harmed minimally, in terms of its industry, when it applied export controls to the Soviet and Eastern European markets where it found little or no competition, but if controls are now to be continued under the misguided assumption that they will protect U.S. high-technology companies from other competitors, particularly in the Far East, we will be doing far more serious damage to our economy than was done in the era when Eastern Bloc was the principal target of our control regime.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Shattuck follows:]

TESTIMONY OF

JOHN SHATTUCK

VICE PRESIDENT, HARVARD UNIVERSITY

on

THE EFFECT OF CHANGING EXPORT CONTROLS ON COOPERATION IN SCIENCE AND TECHNOLOGY

before the

COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

May 16, 1990

Mr. Chairman:

I am pleased to have the opportunity to appear before the Committee on Science, Space and Technology to address a subject of great importance to our country and to the pursuit of science and technology. I wish to stress at the outset that while I have written extensively about the subject of national security information controls in recent years,* I am trained as a lawyer, not as a scientist. I currently serve as Vice President for Government, Community and Public Affairs at Harvard University.

I would like to begin my prepared statement by reviewing the origins of the current system of export controls over scientific and technical information, and the impact that these controls have had on scientific communication in the United States. Following that, I will address the questions posed by the chairman in his introduction to the hearings, specifically:

(1) the impact of reduced restrictions on the climate of scientific cooperation;

(2) the effect of less restrictive COCOM controls on U.S. national security decision directives and technical data regulations;

(3) steps to be taken under U.S. immigration law to increase the flow of Eastern bloc scientists and engineers into the U.S.;

(4) the use of scientific cooperation to encourage political change in Eastern Europe; and

(5) the impact of reduced export controls on the competitiveness of U.S. high-technology industries.

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*Pressures to Restrict the Communication of Science, NATO Workshops on the Changing University, Harvard University (March 1990); A Presidential Initiative on Information Policy, with Muriel Morisey Spence (Benton Foundation 1989); "Needed: A Free Flow of Information and Ideas," Scientific American (January 1989); Government Information Controls: Implications for Scholarship, Science and Technology, with Muriel Morisey Spence (Association of American Universities 1988); "The Dangers of Government Information Control", with Muriel Morisey Spence, Technology Review (April 1988); "Federal Restrictions on the Free Flow of Information and Ideas," Government Information Quarterly (1986).

I

Information and knowledge are vital resources in a modern technological society. The economic and military strength of the United States is increasingly dependent upon our capacity to translate an expanding information and knowledge base into products and processes that contribute to prosperity and national defense. In an effort to protect these resources the federal government in recent years has developed a broad policy to control the dissemination of scientific and technological information so that it is less accessible to foreign competitors and hostile nations.

The collateral effects of this policy on scientific communication have been quite negative. National security controls have curtailed the ability of American scientists to communicate technical data and collaborate freely with their foreign counterparts. The capacity of the United States to innovate and compete in a world economy driven by technology has been diminished in subtle but important ways by an export control system that restricts scientific communication. Restrictions on the publication of federally funded research have deprived the public of information for which it has paid with its tax dollars.

The short-term security benefits of these restrictive information policies have been outweighed by substantial long-term costs to the economy, the national defense, and our democratic tradition of open government. Reports by the National Academy of Sciences (NAS) in 1982, 1987 and 1988 have warned of a growing threat to U.S. economic and military security of broad controls on scientific communication.* "With respect to U.S. military and economic progress," the 1982 report concluded, "controls may slow the rate of scientific advance and thus reduce the rate of technological innovation. Controls also may impose economic costs for U.S. high technology firms which offset both their prices and their market share in international commerce. Controls may also limit university research and teaching in areas of technology. A national policy of security by accomplishment has much to recommend it over a policy of security by secrecy."

The 1987 NAS report indicated that the cost to the U.S. economy of the current regime of export controls, including controls over technical and scientific data, is 188,000 jobs and $9 billion per year. According to the report, 52 percent of U.S. high technology companies experienced lost sales in 1986 primarily as a consequence of export controls. Thirty-eight percent of U.S. high

*Scientific Communication and National Security (NAS 1982); Impact of National Security Controls on International Technology Transfer (NAS 1987); Global Trends in Computer Technology and Their Impact on Export Controls (NAS 1988).

technology companies had existing customers express a preference to shift to non-U.S. sources of supply to avoid entanglement in U.S. controls, and more than half expected the number of such occurrences to increase over the following two years. Furthermore, limits on participation by foreign citizens in the U.S. economy have deprived the U.S. of needed foreign expertise. For example, 40 percent of all doctoral engineers entering the work force every year are foreign citizens.

II

As a general rule, only two types of limitations can be imposed on the communication of scientific and technical data consistent with the U.S. Constitution. In the case of information already controlled by the government, the classification system has been a permissible method of protecting national security interests. In the case of information not controlled by the government, communication has been subject to restriction only in extraordinary circumstances involving a clear and present danger to the national security sufficient to meet the requirements of the First Amendment.

The asserted basis for restricting unclassified scientific and technical data is that they are different from other kinds of information protected by the First Amendment. First, technical data can be used to create things that are intrinsically dangerous, like weapons systems. Second, such data can have an immediate economic utility and are thus more like commodities than ideas. Third, scientific discovery often results from the direct involvement of government as a sponsor of research. Based on these purported justifications, an extensive system of export controls over categories of technical data has been devised; new controls have been developed over the kinds of communications scientists can have among themselves; and additional limitations on the communication of "sensitive unclassified" information have been proposed.

The benign view of these restrictions is that they require only a "minor adjustment" of the First Amendment to fit the conditions of contemporary science and technology. But there are many practical difficulties in establishing narrow definitions of what information should be controlled, and the evidence is mounting that the end result is likely to be more damaging than the evil it is intended to cure.

Regulatory restrictions on the dissemination of technical information have been based on the laws governing foreign exports, particularly the Export Administration Regulations (EAR) promulgated pursuant to the Export Administration Act of 1979. The export control laws were originally

enacted to regulate the overseas export of goods and machinery. Over the last decade and a half, however, they have been increasingly applied to restrict the communication of technical information and ideas within the United States. The Export Administration Act of 1979 which was renewed by Congress in 1985, controls the export of "goods and technology which would make a significant contribution to the military potential of countries which would prove detrimental to the national security." Technology is defined to include "information, whether in tangible . . . or intangible form, that can be used to design, produce, manufacture, utilize, or reconstruct goods, including computer software and technical data."

An example of the negative effect of export controls on the communication of science and technology involves repeated efforts over the past decade by the Departments of Defense and Commerce to persuade scientific and engineering societies to limit access to professional conferences at which unclassified technical papers are presented. Since 1980 the proceedings of at least seven professional societies have been affected at least once each by export control policies, including the American Vacuum Society, the Institute of Electrical and Electronic Engineers, the American Ceramics Society, the Institute of Aeronautics and Astronautics, the Society for the Advancement of Material and Process Engineering, the Society of Photo-Optical Instrumentation Engineers, and the Linear Accelerator Conference.

A typical instance of the problem occurred in March 1985, when officials of the Society of Photo-Optical Instrumentation Engineers (SPIE) learned that DoD had expressed concern that the presentation of 43 papers in open sessions at an SPIE conference scheduled for the following month would violate the export control laws. The contested papers all were the products of government-sponsored research, but less than one-third contained classified information. Under an agreement between SPIE and DoD, 28 of the papers were presented at sessions which only United States and Canadian citizens and permanent U.S. residents could attend and where everyone in attendance was required to sign an "Export Controlled DoD Technical Data Agreement." Signers agreed to disseminate information only to other certified persons, and the information could be shared with foreign nationals only if an export license was obtained.

Protest to the Defense Department in September 1985 by the presidents of twelve leading scientific organizations resulted in two clarifying moves by the federal government. Neither went to the heart of the problem. The first was the issuance of National Security Decision Directive 189 in September 1985, exempting unclassified basic research from restriction, with one significant caveat: "except as provided in applicable U.S. statutes." One such statute, of course, is the Export Administration Act. A second clarifying move was the issuance by DoD of a rule in

February 1986 establishing procedures "for consideration of national security in the dissemination of scientific and technical information in the possession or under the control of the Department of Defense at conferences and meetings.

Not much changed following the promulgation of these two rules. An example of how the new DoD policy was implemented occurred in June 1986 at the Linear Accelerator Conference, a biennial international gathering of nuclear physicists. Thirteen papers written under sponsorship of the DoD Strategic Defense Initiative Office were submitted for clearance six weeks before the conference, as required. On the morning of the conference the authors were informed for the first time that the papers could not be presented. The stated reason was not classification, but export control. The decision was urgently appealed and a hastily called meeting led to the clearance of ten of the papers -- in once instance only five minutes before presentation. The remaining three papers were not approved for inclusion in the conference proceedings. According to the American Physical Society, one of these involved work that had been published before.

In order to avoid problems of preclearance, some scientific and technical societies have informally barred foreign scientists from attending their meetings. These include such prestigious associations as the Society of Manufacturing Engineers, the American Ceramics Society and the Society for the Advancement of Material and Process Engineering. Nevertheless, sponsorship of restricted meetings is still exceptional among scientific societies. According to a 1986 survey conducted by the American Association for the Advancement of Science, "in cases where societies have adopted policies regarding foreign participation in their meetings, two-thirds of the societies prohibit society sponsorship of closed or restricted sessions."

III

Under the export control system, classrooms, libraries and research laboratories are all areas where U.S. scientists must be careful about foreign contacts. For example, a materials science course offered at UCLA Extension in 1984 on "Metal Matrix Composites" initially had to be limited to students who were U.S. citizens because the course involved unclassified technical data appearing on an export control list. Another example was an effort by the Department of State in 1981 to require universities to report campus contacts between U.S. citizens and Chinese exchange students. More recently, in July 1987 the Federal Bureau of Investigation initiated a "Library Awareness Program" within its counterintelligence effort to urge librarians to identify library users who might be "hostile intelligence people." By September 1987 FBI officials had visited approximately 20 libraries in the New York area. Finally, the Department of Defense has required

universities engaged in DoD-sponsored research in artificial intelligence to certify that persons who receive technical data generated by the research are U.S. or Canadian citizens.

Another area where U.S. scientists have had difficulty collaborating with their foreign counterparts involves scientific instrumentation and equipment. A prominent example is the use of supercomputers -- the next generation of computing technology. Supercomputers have computational capacities many times greater than computers. The National Science Foundation has provided the major portion of the funding for five supercomputers at university consortium centers with the intention that they will be used for unclassified basic research. Proposed federal guidelines to limit foreign scholars' access to supercomputers drew expressions of dismay from research scientists, who feared that restraints on the use of unclassified facilities would be harmful to the quality of academic science.

In response to these concerns, the National Science Foundation in cooperation with representatives from the academic supercomputer centers prepared revised guidelines designed to balance security concerns against considerations of academic independence. The NSF guidelines are intended to insure that academic research institutions are not responsible for enforcing the export control laws. The guidelines permit students from all countries to have access to supercomputers for course work required of them in regular university programs. Researchers from Eastern Bloc nations not known to be actively engaged in intelligence collection are permitted access for specialized research in fields with no direct defense or intelligence applications.

Beyond restrictions on contacts between U.S. and foreign scientists, general categories of scientific and technical research have been designated by the government as inherently sensitive and therefore subject to information control. A prominent example is cryptography. Since 1981 this field has been affected by a National Security Agency designation as "sensitive", and many cryptologists now voluntarily submit their work to NAS for prepublication reviews in order to avoid running afoul of the export control laws. Nuclear energy is another scientific field that is increasingly secret. In 1981, at the request of the Reagan Administration, Congress amended the Atomic Energy Act to authorize the Secretary of Energy to regulate "the unauthorized dissemination of unclassified nuclear information."

A final area of scientific and technical information targeted for export control in recent years is information in electronic databases. This is by far the largest category of potentially restricted information, because it can be found in any academic, commercial, or governmental computerized information system. National Security Decision Directive (NSDD) 145, issued by President

Reagan in 1984, calls for "a comprehensive and coordinated approach" to all telecommunications and automated information systems, under the theory that "information, even if unclassified in isolation, often can reveal sensitive information when taken in the aggregate."

In the wake of NSDD 145, President Reagan's former National Security Advisor, John Poindexter, promulgated a directive in 1986 that sought to restrict not only unclassified information affecting national security interests, but also any computerized information that could adversely affect "other government interests", including "government or government-derived economic, human, financial, industrial, agricultural, technological, and law enforcement information". This White House directive raised the specter of U.S. intelligence agencies monitoring and regulating virtually all academic and commercial computerized databases and information exchanges in the United States. The directive was withdrawn in March, 1987 under congressional pressure, but the underlying policy, set out in NSDD 145, remains in place.

IV

In order to address the mounting problems created by export control policies over the last decade, the National Security Council and the Departments of Defense and Commerce should conduct a thorough review of the current system of export controls and related restrictions on the communication of unclassified scientific and technical data. In expanding the policy review that he recently initiated, President Bush should require the NSC to provide regular, affirmative policy direction to the responsible line agencies to protect military security and promote national economic interests by substantially reducing the areas of control, thus enhancing the ability of U.S. scientists and businesses to benefit from the increased availability of scientific and technical data. As the National Academy of Sciences recommended in its 1987 report, "the preparation of control lists must be a dynamic process that is both informed by advice from technical advisory groups and constrained by the need to be clear, to focus control efforts more narrowly on fewer items, and to coordinate U.S. actions more clearly with that of the Coordinating Committee on Multilateral Export Controls (COCOM) of our allies."

The President should also direct the NSC and the relevant line agencies to work with the Congress to eliminate the use of restrictions on unclassified fundamental research. Specifically, two sources of authority should be amended or repealed.

First, the Department of Defense Authorization Act of 1984 now contains an exemption to the Freedom of Information Act which permits DoD to "withhold from public disclosure any technical

data with military or space application in the possession of, or under the control of, the Department of Defense," whose export would otherwise require a validated export license. The effect of this provision has been to bar the publication of certain unclassified technical research conducted under government contract. A particularly dramatic example of this provision's effect occurred in March 1985 when DoD notified the organizers of the international symposium of photo-optical instrumentation engineers that nearly two-thirds of the scheduled papers could not be publicly presented because they contained information falling within the new FOIA exemption. This restraint on the communication of unclassified research should be repealed.

Second, National Security Decision Direction 189, signed by President Reagan in 1985, states that "[n]o restrictions may be placed upon the conduct or reporting of federally funded fundamental research that has not received security classification, *except as provided in applicable U.S. statutes.*" Since the applicable statutes include the export control laws, the qualifying phrase offers no protection for the open communication of basic research and, thus, should be deleted.

V

In response to the questions posed by the chairman of this committee in introducing the hearing, I offer the following observations:

1. If the West's export control regime becomes less restrictive in the near future, there can be little doubt that the international climate of cooperation in science and technology will improve. Many of the technologies that the current regime of controls attempts to reach are increasingly uncontrollable in a global economy driven by rapid technological change. This point was made forcefully by the National Academy of Sciences in its 1988 report, Global Trends in Computer Technology and Their Impact on Export Controls. Accelerating trends in international software development and the growth of small, high-powered computers have made much of computer technology inherently uncontrollable. Moreover, as the NAS report points out, "tighter U.S. controls may reflect the absence of a fully multilateral control effort, but there is a risk that in the computer area, the United States may lock the proverbial barn door after the horse has escaped." In announcing the proposed relaxation of COCOM controls, the Administration is finally beginning to heed the warning sounded by the National Academy of Sciences and others in recent years. The result will be an opportunity for greater cooperation with the Eastern Bloc in areas of science and technology that are driven by rapidly changing global market forces. The one word of caution I would

offer is that COCOM should take steps to secure the participation of Eastern Bloc countries in the Berne Convention on patents and copyrights so that Western intellectual property rights are not unintentionally compromised by the new openness of technological communication.

2. If the West's export control regime becomes less restrictive, a thorough review of U.S. national security decision directives and regulations relating to the flow of "technical data" will be necessary. Particular attention should be paid to National Security Decision Directives 145 (telecommunications and automated information systems) and 189 (transfer of scientific, technological and engineering information), as outlined above. In addition, the security designation, "sensitive unclassified data", should be reviewed to determine whether it has any continuing utility in a substantially decontrolled environment of scientific and technological communication.

3. In order to increase the flow of Eastern Bloc scientists and engineers interested in studying and working in the United States, it will be necessary to remove several significant impediments in U.S. immigration law and practice. Among these are substantial delays in the issuance of third-preference visas for academic work in the U.S.; delays in issuing labor certification for academic employment; unreasonably strict limitations on the definition of "immediate family" of academics qualifying for immigration; and prohibition against entry into the country of persons who have tested HIV-positive, including scientists and researchers who seek to attend scientific conferences. A variety of bills pending before the Congress would alleviate these and other immigration impediments on the flow of scientists into the United States. These include S.358, which would markedly reduce State Department visa backlogs for scientists and others; HR 4300, which would reduce labor certification delays for foreign scientists and technicians, while unfortunately setting what I believe is an unprecedented and inappropriate cap on the number of non-immigrant scientists and scholars allowed in the U.S.; HR 4400, which would broaden the definition of "immediate family" to include dependent parents; and HR 4506, which would direct the Secretary of HHS to review and revise existing medical restrictions on entry into the United States.

4. An effective way to use cooperation in science and technology as a "carrot" to encourage political change in Eastern Europe is to open the doors to Eastern Europeans to study in the United States. One of the principal U.S. assets in a rapidly changing

world and an increasingly global economy is its system of higher education. No other country offers as many opportunities for higher education, and it should come as no surprise that the United States is the country of choice for international students, scholars, scientists and technicians seeking to study, teach and conduct research. An opportunity for an Eastern European to study, teach or conduct research in the United States may lead to a further opportunity to influence political change in Eastern Europe. It is no accident, for example, that many of the students who were active in the democracy movement in China had studied – or are continuing to study – in the United States. For all these reasons, it would be worth considering the value of promoting educational cooperation with Eastern Bloc countries by channelling foreign assistance funding into scholarships for Eastern Bloc students to attend U.S. universities.

5. There appears to be a consensus that the short-term effect of a less restrictive export control regime on the competitiveness of U.S. high-technology companies will be positive. According to a 1987 National Academy of Sciences study, Impact of National Security Controls on International Technology Transfer, the existing U.S. export control system is responsible for a loss of 188,000 jobs and $9 billion in revenue annually. In addition, the 1988 NAS study on global trends in computer technology concluded: "As the computer market becomes increasingly global, U.S. firms have increasing foreign competition, mostly from firms operating with fewer export barriers under the same COCOM guidelines. Tighter U.S. controls may reflect the absence of a fully effective multilateral effort, but there is a risk that in the computer area, the United States may lock the proverbial barn door after the horse has escaped. And if the U.S. competitive position in computer technologies erodes, tighter U.S. controls will only find the United States devoting too much effort to controlling technologies available in equal or better form elsewhere." To put the matter in its most concrete form, the U.S. was only harmed minimally when it applied export controls to Soviet and Eastern European markets, where it found little or no competition. If controls are now continued under the misguided assumption that they will protect U.S. high technology companies from other competitors, particularly in the Far East, we will do far more serious damage to our economy than was done in the era when the Eastern Bloc was the principal target of the control regime.

Thank you for the opportunity to present these views to the Committee.

The CHAIRMAN. Thank you very much for your splendid testimony.

The Chair recognizes Dr. Gerald Dinneen.

Mr. DINNEEN. Thank you, Mr. Chairman. Thank you for the invitation to appear before this committee.

I have prepared a statement, and with your permission, it will be entered in the record.

The CHAIRMAN. No objection, so ordered.

Mr. DINNEEN. We at the Academy of Science and the Academy of Engineering are always happy to come and testify and work with your committee and I would like to make just a few brief comments since the material is in the statement and much of what I had to say has already been said by the previous speaker.

I thought I would touch on just two things. First of all, why this subject is important to the Academy of Sciences and Engineering and to the Institute of Medicine and then an important trend that I think is taking place which is going to make sure that this problem continues as an important issue.

The Academy is interested, because of its charter to advise the government. Mr. Shattuck has already mentioned the number of studies which we've done with support from the government on this issue. And the second reason is that the members of the Academies are concerned about the health of science and engineering. Particularly the health of science is very strongly dependent on openness of communication, scientific communication around the world and within the U.S.

Our interest in the health of U.S. science, then, makes us interested in having open communications in basic science.

In order to encourage that communication, the Academy has, through bilateral arrangements with other countries, sponsored exchange programs over the last many years. This past year, over 250 American scientists and engineers were involved with exchange programs with people from other countries, particularly Soviet Union and Eastern Europe.

Incidentally, that's a big increase from 10 years ago when the tighter export controls were somewhat of a deterrent to these, so we're very pleased to see the changes that have taken place and the changes that are being recommended, which should continue to encourage open scientific communication.

I should point out, however, that export controls aren't the only things that inhibit this kind of exchange program. There are also items which show up in contracts, as has been mentioned already. There are also voluntary restrictions which people undertake when they receive funds for particular programs and, of course, there's the issue of visas, which I've also covered in my statement.

The members of the National Academy of Engineering, which is my academy, are also interested, of course, in the health of U.S. engineering and I think it's over the last several years that we've recognized that U.S. engineering can, in fact, be strengthened by greater international cooperation. There are very strong engineering programs in many other countries and our companies in this country must have the ability to have access to those engineering developments.

We do this through exchanges, as we do in basic science, and again, the changes in the export controls will make those exchanges easier to accomplish.

There will, of course, still be impediments to that and for the engineering and those things which are more in the applied research area; some of those restrictions are that the companies, the countries that we wish to work with, do, in fact, in some cases, have limited capabilities. The state of their facilities is not as good as ours in many cases and particularly the funding. If we are talking about joint programs, it will be necessary for those countries to have hard currency in order to carry out those—those joint programs.

And in particular, when we're talking about applied technology, we have to have the interest and encouragement of people in industry and that brings me to my final point, which is what I might call the trend that we see.

Mr. Shattuck has mentioned several Academy studies which go back to 1982. If you recall, that first study was called Scientific Communication and National Security Controls. The second study, in 1988, had the word Industrial Competition in it. The '88 study, which was on computers, was very largely associated with industrial competition and the study we're doing now is looking even more strongly at that.

The concern that we've had about competition with the Japanese, the concern we've had about our own companies, such as was mentioned here this morning in the machine tool industry and others, has put more and more emphasis on economic security, as well as national security.

So in the future, I think a lot of this—these questions having to do with exchange of information are going to involve things other than export controls, such as the intellectual property rules and the proprietary information, how that information is protected.

So we think these changes are very important, but other changes are going to need to be looked at and I think your committee is going to have a role to play in that.

Thank you very much, Mr. Chairman.

[The prepared statement of Dr. Dinneen follows:]

Statement of
Gerald P. Dinneen
Foreign Secretary
National Academy of Engineering

Before the
Committee on Science, Space, and Technology
U.S. House of Representatives
May 16, 1990

I am pleased to have the opportunity to meet with you today on behalf of the National Academy of Sciences and the National Academy of Engineering. The topics you are discussing--the impact of a less restrictive export control regime on cooperation between the United States and the USSR and Eastern Europe in science and technology and on the competitiveness of US high technology industry--are of vital importance to the science and engineering communities in the United States as well as to our colleagues abroad.

For several decades the National Academy of Sciences, supported by the National Academy of Engineering, has carried out programs of scientific cooperation with Academies of Sciences of the USSR and seven East European countries. Last year, for example, more than 250 American scientists and engineers and a comparable number of colleagues from the collaborating institutions participated in these activities. In conducting the programs, we have gained considerable experience in adjusting proposed activities to conform with limitations imposed by export controls. I am submitting for the record a brief description of these interacademy programs.

I am pleased to report that during the past year we have seen a significant decrease in limitations placed on these cooperative activities by the US Government due to national security concerns over the sharing of technical information. In several cases, proposed exchange visits and scientific workshops which were rejected by the US Government just one year ago as being in militarily sensitive areas have now been endorsed by the US Government as being very important in fostering scientific linkages between East and West.

Also, during the past few years the Academies have conducted several major studies concerning the impact of export controls on trade and on scientific exchanges. According to our findings, there is no doubt that the relaxation of US export controls will have a favorable impact on trade opportunities for the United States with both Western Europe and Eastern Europe so long as we and our allies agree on and observe the new levels of control. Controls imposed by the United States have historically been more stringent than controls of other countries, placing American suppliers and producers at a competitive disadvantage. It is encouraging that there appears to be a consensus in this Administration that export controls for national security reasons should be limited to those controls which are imposed by all COCOM members. This means that the playing field will now be more level as US industry competes with Japan and West European

countries for high technology markets in Eastern Europe and other markets.

Let me turn to the specific questions which the Chairman raised in his letter to me of May 9, 1990.

1. If the export control regime becomes less restrictive, cooperation in some areas of science and technology will certainly become easier. At the same time, export control regulations are but one factor inhibiting more ambitious programs of cooperation. Other aspects include the lack of access of East European scientists and engineers to hard currency, the limited capabilities of some of these specialists and the poor state of facilities in some fields which constrain the East Europeans from becoming attractive collaborators, and funding constraints on the American side.

With regard to specific areas of interest to the Committee, the National Research Council recently completed a detailed study of potential US-Soviet cooperation in the unmanned exploration of Mars. Our conclusion was that for a variety of practical operational reasons, complementary rather than joint exploration programs best served the US interest. As to cooperation in energy research and development, our extensive joint efforts with Soviet colleagues in this field during the past several years strongly suggest that there are many fruitful avenues for cooperation which are not impeded by export controls including energy conservation, clean fuel technologies, and energy modelling and assessment programs.

2. I am not in a position to comment intelligently on internal government documents such as National Security Decision Directives concerning the flow of technical data. Still, our experience clearly demonstrates that easing of export controls and the attendant relaxation of restrictions placed on scientific and technical exchanges can have dramatic effects for individual scientists and engineers who are seeking collaborators in the USSR and Eastern Europe. Such relaxation is a clear signal to American specialists that cooperation in some high technology areas is acceptable, and American scientists and engineers then become far less hesitant to take initiatives for setting up cooperative programs.

3. With regard to encouraging a greater influx of East European scientists and engineers into the United States for research and education, the greatest barrier is simply the lack of knowledge and experience within the region concerning the procedures in applying for scholarships, fellowships, and research assistantships which are available throughout the United States. Many Hungarians and Poles now understand that our universities and colleges control the bulk of such support funds, and they are increasingly successful in placing students and post-doctoral scientists at US universities on the basis for both personal contacts and formal application procedures. However, most East Europeans believe that the only way for foreigners to apply for financial support in the

United States is to send their applications through intermediaries in Washington. An aggressive educational program sponsored by the US Government in the form of seminars and other outreach activities in Eastern Europe to explain how tens of thousands of foreign students and researchers find financial support in the United States each year seems highly desirable.

With regard to visas, multiple entry US visas have often been suggested as an early step in facilitating repetitive foreign visits to the United States. A less radical departure from well established consular procedures would be to allow the visa officers at US consulates in Eastern Europe more flexibility in approving visas without referral to Washington which invariably causes time delays and all too often results in the visa applicant missing an airplane flight with the difficult task of finding another hard-to-obtain airline reservation. However, I should add that I am not an expert in this area.

4. As to the Committee's interest in the impact of science and technology on political change in Eastern Europe, the recent developments in the region have been attributable in significant measure to failures of the centrally planned systems of the past to encourage effective application of science and technology to economic development. The United States is in a strong position to make substantial contributions to East European institutional development in

scientific research, technological applications, environmental protection, and management and marketing which will contribute to economic growth and will also reinforce the transition in Eastern Europe to democracies and market-oriented economies.

As you know, the Support for East European Democracies Act of 1989 is providing funding for a number of initiatives to help stimulate economic growth, including US contributions to stabilization and enterprise funds. However, the economic needs of the region are so large that in the near term the impact of current US assistance on economic development pursuant to this legislation will be limited. As a longer term complement to the current US effort, US assistance in strengthening the science and technology support systems and the linkages of these systems with production activities could be an extremely important catalyst in modernizing East European economies and in enhancing productivity on a broad basis by the end of the 1990s. Programs which bear directly on economic development through capital investment and technical assistance are very important but also very expensive. On the other hand, relatively inexpensive efforts to strengthen indigenous research and development institutions can, with their attendant multiplier effects, be very cost effective in fostering economic growth.

I would be pleased to elaborate on any of the foregoing comments or to respond to your questions.

The Framework for Interacademy Activities

The NAS program of scientific cooperation with the Academy of Sciences of the USSR dates from 1959. The exchange programs with Poland, Yugoslavia, Hungary, and Romania began in 1966; with Bulgaria and Hungary in 1970; and with East Germany in 1979. While the interacademy programs have been a relatively small portion of the overall cooperation of American scientists with their colleagues in the region, the NAS activity has been the largest bilateral program of scientific cooperation with Romania, East Germany, and Czechoslovakia. Also, as a non-governmental effort, it has effectively weathered low points in bilateral political relations; this stabilizing influence has been particularly important in US-Soviet relations.

Given the prestige of the NAS and the collaborating Academies, the interacademy programs have been very important in giving a high degree of legitimacy and stature to East-West exchanges in general. They have attracted many outstanding senior scientists and a significant number of younger scientists. They have facilitated access by Americans to little known scientific institutions and remote geographic areas in the region, and they have effectively promoted the international character of science and the importance of Soviet and East European participation in global scientific endeavors.

Until 1986, the NAS program focused primarily on exchanges of individual scientists. Then, with the assistance of a major grant from the John D. and Catherine T. MacArthur Foundation in addition to core support provided for many years by the National Science Foundation for exchanges of individual scientists, the NAS rapidly diversified the Soviet program to take advantage of many new opportunities for interactions with Soviet officials and scientists. During the past three years the program has included more than one dozen bilateral scientific workshops in physics, chemistry, biology, space sciences, and other fields. A comparable number of bilateral policy-oriented seminars have been held on energy conservation, preservation of biodiversity, nuclear safety, protection of the global ecology, economic restructuring of industrial societies, and other topics of mutual interest.

Similarly, the NAS diversified its East European program at about the same time. With support from the Ford Foundation, the Rockefeller Brothers Fund, and the Department of State, the NAS initiated a program of policy workshops to complement the core support from NSF for exchanges of individual scientists. Among the policy topics of interest have been introducing research results into practice (East Germany, Yugoslavia, and Bulgaria), improved agricultural practices (Czechoslovakia and Hungary), and ecological preservation (Romania and Poland). Scientific workshops have also been held in East Germany (biology) and in Romania (mathematics).

In short, NAS has developed strong ties with many policy officials and key scientists throughout the region. The interacademy programs have been very effective in supporting in-depth scientific research by individual investigators from East and West, in brokering initial contacts between American scientists and their colleagues, and in stimulating policy dialogues of considerable interest to the US Government and to the Governments throughout the region.

The CHAIRMAN. Thank you, Dr. Dinneen.

Dr. Robert Park.

Mr. PARK. Mr. Chairman, members of the committee, I appreciate the opportunity to state the views of the American Physical Society on the free exchange of scientific and technical information.

We exist for the purpose of exchanging information. Our meetings are open and our publications are available to everyone.

My colleagues have covered many of the points that I think are important. I agree with what they have said. Let me just add a couple of additional points and emphasize—reemphasize some of the things they've said.

In the years since World War II, the United States has become accustomed to a position of preeminence in world science and we must remind ourselves that we reached that preeminence with the help of scientists gathered from all over the world, attracted in no small measure by the openness of the American system.

Throughout the past decade, however, the United States scientific community has struggled to maintain that traditional openness. The old arguments over controls on the flow of scientific information seem already dated. I reread my testimony at another committee of a year ago on this same topic and it seems curiously anachronistic in light of the changes that have taken place.

There are, I think—the changes, of course, are still taking place and while we can't foresee the end of this, I think there are two points that we can see very clearly right now. One, economic health has become a dominant social force in the world. To lead in today's world may require more economic muscle than arms.

Two, the environment and energy concerns limit our options for dealing with the economic problems. To deal with those new realities, the United States must now make a transition from a research establishment driven by defense needs to one more suited to neglected civilian priorities.

What better place to start than export controls? In its two-year study of the impact of export controls, the Allen panel of the National Academy—we've heard referred to already—concluded that our export control policies are costly, ineffective, an obstacle to foreign trade and often damaging to relations with our allies.

In 1962—82, on a visit to the People's Republic of China, I was shown a sophisticated molecular beam epitaxy system. The molecular beam epitaxy is used to fabricate very advanced microelectronic devices that are expected to form the basis of the next generation of ultrafast computers. What made this remarkable was that MBE equipment was at that time on the list of items banned for sale to China.

Had the Chinese obtained the equipment illegally through some third party? Not at all. Out of necessity, they had learned to build their own. The only effect of our export restrictions was to deny some American manufacturer a sale.

Again and again in our export control policies, we found ourselves bailing a boat that had already sunk. But it's the extension of export controls to information and ideas that has most concerned the American Physical Society. Information, as has already been stated in this hearing, cannot be embargoed in the same way as goods. It crosses borders stored in the brains of people.

Inevitably, then, any effort to restrict the export of information leads to measures to prevent its disclosure at home.

Specific suggestions. Somewhat off the subject of export controls, but not on the—but relevant, new classification rules should be issued replacing Executive Order 12356. Executive Order 12356, issued in 1982, reversed a 30-year trend toward less secrecy with a policy of when in doubt, classify; I agree with the proposition of higher fences around less information.

Two, the Export Administration Act should be revised to eliminate all restraints on the dissemination of unclassified information. Not content to restrict access to classification, the government has attempted to control, as we have heard already, sensitive but unclassified information. The very vagueness of such a category invites abuse, as when the FBI sought to recruit librarians as snitches to report on the reading habits of library users.

In recent years, there's been an attempt to impose controls on something called commercially valuable information. I agree with John Shattuck that that's a dangerous way to move. The appropriate way to deal with such considerations is through international patent agreements. From whom do we propose to keep such information? From American companies with foreign branches or foreign stockholders or foreign employees or perhaps from American professors with foreign students?

Third, electronic information should be accorded the same protection as the printed word. We're fast approaching the day when electronic data bases will supplant conventional libraries as the repositories of scientific and technical information and will become the preferred means by which scientists communicate their findings. We're coming very close to that now.

In the attempt by the government to restrain this electronic revolution, as it attempted to do with National Security Decision Directive 146, is to ensure that other nations will take the lead in shaping the future.

Rather than concentrating on the defensive weapon of secrecy, we should be making a greater effort to stay abreast of developments elsewhere in the world. As Lew Branscomb observed in congressional testimony two years ago, "We spend our time discussing what information to keep, sell or give away. The better question is how to create it, acquire it and use it."

It is remarkable how difficult bureaucrats can make this seem. The most important step we could take at very little cost is to make it easier for American scientists and engineers to attend international conferences. At every major conference held in the United States, foreigners make up a large fraction of the attendees, but there are fewer and fewer Americans at international conferences; Research budgets, eroded by inflation, simply won't allow much foreign travel.

Meanwhile, we have a golden opportunity to learn from Soviet and East German colleagues from whom we have been separated. In my own department at the University of Maryland, we have had a stream of distinguished visitors from the Soviet Union in recent months and one of the most distinguished, Roald Sagdeev, has accepted an appointment as professor of physics.

We have much to learn from our Soviet colleagues. It may be time for a little Western glasnost.

The real concern is whether we can maintain our commitment to scientific progress in the face of a declining Soviet military threat. In waiting for the barbarians, the Greek poet, Cavafy, ends with the line, "Now what is to become of us without barbarians? They were a kind of a solution."

Thank you.

[The prepared statement of Dr. Park follows:]

TESTIMONY OF ROBERT L. PARK
DIRECTOR OF THE OFFICE OF PUBLIC AFFAIRS
OF THE AMERICAN PHYSICAL SOCIETY

BEFORE THE HOUSE COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY

HEARING ON

THE EFFECT OF CHANGING EXPORT CONTROLS
ON COOPERATION IN SCIENCE AND TECHNOLOGY

16 MAY 1990

Mr. Chairman and Members of the Committee:

I appreciate this opportunity to state the views of the American Physical Society on the free exchange of scientific and technical information. The American Physical Society is the leading organization of physicists in the United States, with more than 40,000 members in university, industry and government laboratories. About 4,000 members reside outside the United States. The purpose of the Society is to advance physics through the publication of journals and the organization of meetings for the exchange of scientific information. Each year the Society publishes more than 70,000 pages of scientific papers and holds or sponsors between 30 and 40 scientific conferences. All of our meetings are open and our publications are available to everyone.

Now what's to become of us without barbarians? Those people were a kind of a solution.

(From "Waiting for the Barbarians" by C.P. Cavafy)

In the years since World War II, the United States has become accustomed to a position of preeminence in world science. It is well to remind ourselves that preeminence was achieved with the help of scientists gathered from all over the world, attracted in no small measure by the openness of American science.

Throughout the past decade, however, the US scientific community struggled to maintain its traditional openness. We were urged to barter openness for promises of greater security. It was not always a good bargain. Erroneous scientific information and flawed technical concepts, protected from normal scrutiny and debate by national security classification and export restrictions, were at times used to promote costly and impractical programs that left us more vulnerable.

But the old arguments over controls on the flow of scientific information are no longer relevant. Recent

international political upheavals, unforseen by any planner, force us to reexamine how we conduct science. It seems certain that many of the institutions created to meet our nation's past needs will not be equipped to meet the challenges of the future. While the end of the current restructuring now taking place cannot be foreseen, two things seem clear:

o Economic health has become a dominant social force in the world. To lead in today's world requires more economic muscle than arms.

o Environment and energy limit our options for dealing with economic problems.

We are ill prepared to deal with these new realities. The post World War II concentration of resources in defense related activities has placed the US at a competitive disadvantage relative to countries that have been able to concentrate on commercial goals. The US must now make a rapid transition from a research establishment driven by defense needs, to one more suited to neglected civilian priorities.

What better place to start than export controls? In its two year study of the impact of export controls, the Allen panel of the National Academy of Sciences concluded that our export control policies are costly, ineffective, an obstacle to foreign trade, and often damaging to relations with our allies.

In 1982 on a visit to the Peoples Republic of China, I was shown a sophisticated molecular beam epitaxy system in a laboratory in Beijing. MBE is used to fabricate the very advanced microelectronic devices that are expected to form the next generation of ultra-fast computers. What made this remarkable was that MBE equipment was at that time on the list of items banned for sale to China. Had the Chinese obtained the equipment illegally through some third party? Not at all. Out of necessity they had learned to build their own. The only effect of our export restrictions was to deny some American manufacturer a sale. Again and again in export controls we found ourselves bailing a boat that has already sunk.

But it is the extension of export controls to information and ideas that has most concerned the American Physical Society. Information cannot be embargoed in the same way as goods; it crosses borders stored in the brains of people. Inevitably then an effort to restrict the export of information leads to measures to prevent its disclosure at home.

In the view of the American Physical Society, there are specific changes that should be made in our information policies:

I. New classification rules should be issued, replacing E.O. 12356.

Issued in 1982, E.O. 12356 reversed a 30-year trend toward less secrecy with a policy of "when in doubt, classify." It had a particular impact on scientific and technical information, for the first time allowing information that had previously been declassified to be reclassified. We recommend higher fences around less information.

II. Export Administration Regulations should eliminate all restraints on the dissemination of unclassified information.

Not content to restrict access through classification, the government has attempted to control "sensitive but unclassified" information. The very vagueness of such a category invites abuse, as when the FBI sought to recruit librarians as snitches, to report on the reading habits of library users. In recent years there has been an attempt to impose controls on something called "commercially valuable" information. From whom do we propose to keep such information? From American companies with foreign branches? Or foreign stockholders? Or foreign employees? Or perhaps American professors with foreign students?

III. Electronic information should be accorded the same protection under the First Amendment as the printed word.

We are fast approaching the day electronic databases will supplant conventional libraries as the repositories of scientific and technical information and will become the preferred means by which scientists communicate their findings. Any attempt by the government to restrain this electronic revolution, as it attempted to do with NSDD 145, is to insure that other nations will take the lead in shaping the future.

Rather than concentrating on the defensive weapon of secrecy, we should be making a greater effort to stay abreast of developments elsewhere in the world. As Lew Branscomb observed in Congressional testimony two years ago: "We spend our time discussing what information to keep, sell, or give away. The better question is how to create it, acquire it and use it."

It is remarkable how difficult bureaucrats can make this seem. The most important step we could take, at very little cost, is to make it easier for American scientists and engineers to attend international conferences. At every major conference held in the US, foreigners make up a large fraction of the attendees, but there are fewer and fewer Americans at international conferences in Europe or Japan. Research budgets, eroded by inflation, simply won't allow much foreign travel.

Meanwhile we have a golden opportunity to learn from Soviet and East European colleagues from whom we have been separated.

In my own Department at the University of Maryland we have had a stream of distinguished visitors from the Soviet Union, and one of the most distinguished, Roald Sagdeev, has accepted an appointment as Professor of Physics. We have much to learn from our Soviet colleagues. It may be time for a little western "glasnost."

But as we enter into cooperative ventures in science, we should be certain that these are projects worth doing. The test must still be whether it is good science, or it will certainly fail. Manned space exploration was initially justified on political rather than scientific or technical grounds. The enormous diversion of resources and talent required for a Moon/Mars project may not be justified in the new political climate.

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ROBERT L. PARK

Restricting Information: A Dangerous Game

Government controls now include "sensitive but unclassified" data. "Commercially valuable" is next.

In May of 1988, President Reagan was lecturing students at the University of Moscow on the virtues of a free society. At home, his new FBI director, William Sessions, was defending the "Library Awareness Program" before a Senate committee. Almost a year earlier, the *New York Times* had exposed the FBI's attempts to recruit snitches at scientific and technical libraries; FBI agents had been visiting libraries all across the country asking employees to monitor the activities of "suspicious-looking people" or persons with "foreign-sounding names."

It seems more reminiscent of Inspector Clouseau than Elliot Ness. But behind the FBI's clumsy recruiting effort is the conviction on the part of those responsible for keeping the nation's secrets that the traditional openness of American society is a weakness—and a threat to national security and economic health. Not content to restrict access through classification, the government has attempted to keep foreigners away from information termed "sensitive but unclassified." Now it seeks to control "commercially valuable" information.

But the government is playing a dangerous game. The same actions that delay technology transfer to our military adversaries or economic competitors inevitably impede the transfer of information within our own borders. Whether the government likes it or not, the price of maintaining a free and informed society is that sometimes the neighbors listen in.

Paved with good intentions

The road to Library Awareness began in Santa Barbara, California, nearly a decade ago. In January of 1980, Jimmy Carter faced a reelection campaign burdened by a string of foreign-affairs disasters that had culminated with the Soviet intervention in Afghanistan. To demonstrate the extreme displeasure of the United States, without quite severing relations, the president ordered a number of sanctions, including the controversial decision to withdraw from the Moscow Olympics and tighter restrictions on exports to the Warsaw Pact nations.

Prodded by a Carter directive to suspend validated export licenses and by congressional criticism of its lax enforcement of the technical data provisions of

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the export laws, the Department of Commerce cast about for a way to demonstrate its vigilance. Its eye fell on the hapless first International Bubble Memory Conference, set to begin in Santa Barbara on February 20.

In the unsentimental world of computer electronics, magnetic bubble memory technology is all but forgotten today, but in 1980 it was a leading candidate for the next generation of computers. Barely eight days before the conference was to begin, Commerce notified the organizers that the conference constituted proscribed export of technical information and required a validated export license. Further, the organizers were ordered to "disinvite" the nationals of all communist countries, including China, and require all other foreigners to sign an affidavit agreeing not to divulge any information gleaned from the conference to persons from the proscribed countries. The conference organizers resisted. But in the end, faced with threats of fines and even jail, they acceded to the Commerce Department's demands.

Before 1979, export restrictions had been applied almost exclusively to actual strategic goods. A 1976 study by the Defense Science Board, however, argued that the emphasis should be redirected to deny our opponents the techniques and information required to produce their own goods. This seemed to make perfect sense. Congress responded in the Export Administration Act of 1979 by providing tough new controls on the flow of "technical data."

It was a prescription for trouble. People have a pretty clear sense of what constitutes export of goods, which must be physically transported and can, in principle, be controlled by licensing shipments. Ideas and information are not so easily contained. Information crosses borders through the mails or over telephone networks or in a hundred other ways. Even if we could monitor every such channel, people will still cross borders and information stored in their brains will cross with them. Inevitably, then, efforts to prevent information from being transferred abroad lead to measures that prevent its disclosure at home. The Commerce Department had taken the first big step down that road.

Since the 1980 Bubble Memory Conference, the scientific and technical community in the United States has fought one skirmish after another, each in response to federal agencies' attempts to plug channels for the dissemination of unclassified information abroad. The actions taken or attempted by the government include:

- barring foreigners from attendance at unclassified conferences
- pressuring authors to withdraw unclassified papers from open meetings
- pressuring researchers in certain fields to submit their unclassified research papers to government agencies for prepublication review
- including clauses in unclassified university research contracts that prohibit participation by foreigners
- barring foreigners from unclassified research and computing facilities

In most of these instances, it is not difficult to fathom the logic—however perverse—of the government's technology-transfer watchdogs. But the FBI's latest campaign, the Library Awareness Program, has baffled librarians and civil libertarians alike.

The truth about Library Awareness

The FBI acknowledges that its concern over libraries is with Soviet access to unclassified information. But aside from an FBI claim that Soviets or their agents have stolen hundreds of thousands of microfiche from libraries—a claim the librarians say is preposterous—what laws have they violated?

After the *New York Times* exposé in 1987, the National Security Archive tried to find out. It requested all FBI records on the Library Awareness Program under the Freedom of Information Act. Nearly a year later, not one document had been released and the Archive filed suit in federal court. The FBI responded to the lawsuit by releasing 22 documents, all of which had been classified "SECRET." Entire pages from the documents were deleted, and the remaining pages were heavily censored. There was no hint in what remained that the program had uncovered anything but angry librarians.

It was not until July 13, 1988—when FBI Assistant Director James Geer testified before the Senate Judiciary Committee—that the justification for Library Awareness was revealed. In his testimony, Geer charged that Soviets agents were visiting libraries in an attempt to gain access to the National Technical Information Service. NTIS, which is operated by the Commerce Department, collects and disseminates unclassified reports of government-sponsored research.

It is self-supporting through user fees and can be accessed on-line through most large research libraries. According to Geer, "The Soviets are barred by executive order from accessing materials through NTIS." The "executive order," he said, was signed by President Carter.

This was news to librarians, who had never been informed of any restrictions on the use of NTIS. In fact, the FBI is mistaken. There is no directive at any level barring Soviet citizens or anyone else from access to NTIS through libraries in this country. The Carter directive to which Geer was referring is the same January 1980 memorandum to the Secretary of Commerce that brought the full force of the federal government down on the Bubble Memory Conference. But it is not a numbered "Executive Order"—and it does not apply to NTIS at all, either directly or indirectly.

We must remember that the openness of the American system is not a weakness; it is our strength.

Intelligence in the Computer Age

Though without a clear legal basis, the Library Awareness Program is part of a larger government effort to restrict the use of electronic data bases by foreigners. The government's concern here has to do with the so-called aggregate, or mosaic, concept—wherein a collection of information, even if the individual items are unclassified, may reveal government secrets when viewed as a whole. The aggregate rule is frequently invoked to classify not only collections of data, but also analyses based entirely on unclassified information, as in the famous *Progressive* case. In 1979, the government sought to block publication in *The Progressive* magazine of a how-to article on making hydrogen bombs, which was derived entirely from publicly available sources.

The seduction of embassy guards notwithstanding, most of the secret information the KGB obtains on U.S. policies and programs is deduced from public sources. These include the *New York Times*, *Business Week*, *The Economist*, and similar publications, many of them carried by commercial data base services such as NEXIS. The KGB can access all this newsprint electronically and analyze the information with a computer. A few strokes on the keyboard can uncover more information than a roomful of agents with scissors and paste pots. Our own intelligence works in much the same way, of course. But our information-rich democracy seems to many to give the Soviets a big advantage in this game.

Alarmed at this prospect, the White House, on September 17, 1984, issued National Security Decision Directive 145, *National Policy on Telecommunications and Automated Information Systems*. This initially secret document called on government agencies to "encourage, advise, and assist the private sector" in taking steps to protect "sensitive nongovernment information." Agents of the National Security Agency, the FBI, and the Department of Defense have therefore "encouraged" commercial data base companies to suppl, lists of their subscribers. Such encouragement, however gentle, can seem to most citizens very much like intimidation.

Secrecy and competitiveness

The problem has recently taken on a new dimension. To the information restrictions based on national security concerns have been added new measures based on commercial competitiveness. Here, as in the Library Awareness Program, our information guardians do not always seem concerned about facts. Consider the strange case of the "samurai shuttle."

In the summer of 1987, as in the summer of 1988, Congress was debating a trade bill. Among the measures being considered to restore U.S. competitiveness was an administration proposal to grant NASA an exemption to the Freedom of Information Act (FOIA). Attempts to emasculate FOIA are nothing new. They come up every year, and Congress had granted a similar exemption to the Department of Defense in 1984. In support of the NASA exemption, the Office of Science and Technology Policy of the White House reported that the Japanese had used an FOIA request to obtain complete design details of the American space shuttle. The Japanese had thereby saved themselves "hundreds of millions of dollars and years of research" in a plan to wrest the lead in commercialization of space from the United States.

Something in this story did not sound quite right. Copying the troubled U.S. shuttle program hardly seemed like a prescription for sure-fire success in the space business. Besides, American companies often complained about NASA's unresponsiveness to their FOIA requests. Senator Patrick Leahy (R-Vt.) wondered what sort of FOIA request by the Japanese could have succeeded in releasing such a flood of documents. When NASA searched its files, it turned up only a single FOIA request from Japan. It had been from a university professor asking for three specific documents. NASA had responded that one of the documents could not be exported and another could not be found, but had supplied the third—a glossary of terms.

But the myth persists that America's problems in competitiveness result from some one-sided flow of technical secrets. In July of 1987, President Reagan addressed 2,000 businesspeople, engineers, and scientists gathered in Washington to discuss commercial applications of high-temperature superconductivity. A great irony was that participation in the meeting was limited to U.S. citizens—by order of the president's science advisor—even though the new class of superconducting materials that inspired the conference was discovered in Zurich and first confirmed in Tokyo and Beijing. The principal U.S. contribution at the time of the conference was by a group of Chinese-surnamed researchers from the University of Houston, most of whom would not have been permitted to attend.

The exclusion of foreigners was symbolic. In his speech the President declared: "We must . . . move to protect intellectual property, and write protections into the Freedom of Information Act for scientific and technical information generated by government laboratories." Legislation requiring "commercially valuable" information generated in government-owned or -operated laboratories to be withheld from public disclosure has since been proposed by the White House and introduced in both houses of Congress.

There is a further irony here. Shortly before the White House forwarded to Congress its proposed legislation—the Superconductivity Competitiveness Act—a group at the Japanese government's National Research Institute for Metals in Tsukuba discovered yet another important new superconductor. Most American researchers learned of it just three days later from the *New York Times*. Lucky for us, the Japanese had no restrictions of the sort now being proposed in the United States.

Clearly we are in no position to erect a wall around this field. For one thing, we would only invite retaliation by the international scientific community. In a rapidly moving field such as superconductivity, progress depends in large part on the informal exchange of ideas and results. Such channels are easily severed if there is a perception that one side is holding out on the others. For another thing, if government laboratories are required to review research results for potential commercial application, the responsibility for deciding what is to be withheld will fall to bureaucrats with little experience in research or its applications. Inevitably, such an arrangement will slow the dissemination of important research results from government labs.

This raises a crucial question: how can we prevent foreign interests from exploiting commercially or strategically useful information while preserving its accessibility to American citizens? The answer is, we can't.

Everyone pays

There can be little doubt that U.S. data bases and technical documents are a boon to foreign intelligence agents. But these same resources serve American businesses striving to remain competitive in a global economy, scientists and engineers seeking to stay current in their fields, investigators uncovering corruption, and citizens with a legitimate interest in the activities of their government. In our open, democratic society, the practical result of citizenship-based restrictions on information is to deny access to U.S. citizens and aliens alike.

Some unclassified NASA reports, for example, carry a warning that the document is not to be released "to foreign interests without the express consent of the Office of Aeronautics and Space Technology." In many university science libraries, foreign scholars may represent more than half the users. Librarians to whom I spoke point out that even if they had the resources to establish the nationality of each user, such screening would almost certainly violate universities' antidiscrimination policies. As a result, they refuse to carry the reports.

The same is true of electronic data bases, such as the NASA RECON service. RECON is an extensive

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electronic index of unclassified scientific and technical reports in aerospace and electronics. It was disclosed two years ago that NASA maintains what it calls a "no-no list" of companies that are not allowed to subscribe to RECON because they have foreign customers. Many university libraries have since discovered a stipulation in their contracts barring foreign nationals from using the system, and have thus discontinued RECON. Similarly, the head of scientific and technical libraries at a major state university told me that if there turned out to be any restrictions on the use of the NTIS database they would remove all material obtained through that service—about a million documents.

Once we accept any restraint on communication we are drawn inexorably, by a series of logical steps, to a total prohibition against public disclosure.

What these cases tell us is that information cannot be only a little bit secret. Once we accept any restraint on communication we are drawn inexorably, by a series of logical steps, to a total prohibition against public disclosure. If we ban the export of certain information to the Soviet Union, does it make any sense to allow the Soviets or their agents to obtain the same information through a Freedom of Information Act request? If we deny FOIA requests for the information, surely we cannot allow it to be presented at conferences that might be attended by Soviets or their agents, to be published in journals to which they subscribe, or placed on library shelves, or included in commercial databases. We are eventually led to treat "sensitive information" like any other classified material—that is, to keep it secure and release it only to persons with proper clearance and a need to know. Proper clearance is coming to mean U.S. citizenship.

A nation of immigrants

Such a policy makes less sense in the United States than in any other country on earth. Many of the great leaders of American science, including about a third of our Nobel laureates, began their careers in this country as immigrants. Often they arrive as students and choose to remain when their studies are completed. They are attracted in part by the openness of the American system—a system that traditionally welcomes the talented regardless of their origins. About 40 percent of all Ph.D. engineers entering the U.S. work force this year will not be U.S. citizens.

Today, more than at any time in past, we simply cannot maintain our technological leadership without this influx of foreign manpower. Universities rely on foreign students to fill science classrooms, while much of America's youth dabbles in New Age mysticism, attributing supernatural powers to crystals but disdaining crystallography. While the Japanese prepare to challenge American dominance in biotechnology, fundamentalists in the United States, with encouragement from the White House, seek to purge biology's great unifying principle from our textbooks.

Every study shows American students trailing the rest of the industrialized world in mathematics and science literacy. If we were to begin today to reform our educational system, it would be at least a decade before the effects would show up in our work force. In the meantime, we can ill afford policies that turn foreign scholars away or deny them access to recent developments. The work force we propose to keep ignorant by citizenship restrictions is to a large extent our own.

Strength in openness

Above all, we must remember that the openness of the American system is not a weakness; it is our strength. It is no doubt true, as the Defense Department and the CIA insist, that the KGB maintains an elaborate intelligence network aimed at the acquisition of Western technology. The fact is, however, that the backwardness of the Soviets' technology has little to do with what they don't know. They trail because of the overly bureaucratic and secretive Soviet system, and a stifled civilian economy. These problems were recently described in these pages with remarkable candor by Roald Sagdeev, director of the Soviet Space Research Institute (*Issues*, Summer 1988).

Likewise, the recent successes of the Japanese in the world's high-technology markets have little to do

with whether they are better at keeping secrets. They prosper as a result of educational standards, hard work, the discipline to pursue long-range goals, and freedom from the military burdens of a superpower. We cannot meet their aggressive challenge with the defensive weapon of government secrecy.

When we inaugurate a new president in January, we will have an opportunity to reconsider our stand on scientific communication, unencumbered by the defensiveness of those who conceived the present policies. We must first recognize that we are in the midst of a revolution brought on by the computer, with the end nowhere in sight. Our current policy, embodied in NSDD 145, is a futile attempt to constrain that revolution, instead of joining it. To persist in this negative and ultimately futile policy is to ensure that other nations will assume the leadership in shaping the world.

Second, we must accept the fact that other nations will benefit from our investment in research. This is simply the entry fee into the revolution. Rather than shut foreign researchers out, we must try harder to stay abreast of developments in other nations. It is astonishing how difficult bureaucrats can make this seem. The most important step we could take, at very little cost, is simply to increase funding for American scientists and engineers to attend international conferences.

Finally, as we strive to protect our commercial interests, we must tailor our solutions to fit the problems. President Reagan's statement introducing his proposed Superconductivity Competitiveness Act correctly observes that the United States has failed to convert laboratory breakthroughs into commercial applications. Let us then address that failure and not attempt to compensate by tinkering with the open system that has given us the breakthroughs.

Recommended reading

Balancing the National Interest: U.S. National Security Controls and Global Economic Competition. Report of the Panel on the Impact of National Security Controls on International Technology Transfer. Washington, D.C.: National Academy Press, 1987.

Jerry J. Berman, "National Security vs. Access to Computer Databases: A New Threat to Freedom of Information," *Software Law Journal*, Winter 1987.

Defending Secrets, Sharing Data: New Locks and Keys for Electronic Information. Report of the Office of Technology Assessment of the Congress of the United States, 1987.

Donna A. Demac, *Liberty Denied: the Current Rise of Censorship in America.* New York: PEN American Center, 1988.

The KGB and the Library Target 1960-Present. Intelligence Division, FBI Headquarters, January 1, 1988.

Robert L. Park, "The Muzzling of American Science," *Academe*, September-October 1986.

Robert L. Park, "The Superconductor Follies: Chauvinism, Defense Contracts and Secrecy Won't Beat Japan," *The Washington Post*, August 2, 1987.

Harold Relyea, *Striking a Balance: National Security and Scientific Freedom.* Washington, D.C.: American Association for the Advancement of Science, 1985.

John Shattuck and Muriel Morisey Spence, "Government Information Controls: Implications for Scholarship, Science and Technology," Harvard University, 1988.

The CHAIRMAN. Very good.

The gentleman from California.

Mr. ROHRABACHER. I don't have any questions. Thank you very much, Mr. Chairman. I enjoyed the last quotation. I thought that was—I hadn't heard it before and thank you very much for sharing it with us and thank you for sharing your thoughts with us today.

The CHAIRMAN. Does that also apply to Members of Congress? The barbarians?

No further questions from the gentleman.

The gentleman from Florida, Mr. Lewis.

Mr. LEWIS. I have no questions.

The CHAIRMAN. No further questions.

I want to thank the panel very much, first of all, for having sat through the first part of the—listening to the administrative witnesses and so forth, but I think that you've all stressed the point of view, and that's what we kind of wanted to center on a little bit today—was the idea that of the transfer of ideas and the transfer of people being able to carry those ideas. We're hoping that that will be understood more clearly.

Also, as we have follow-up hearings on this issue, I'd like you to think about the idea of how all of this begins to apply to the major scientific programs that we're working on because it's become very apparent to us that both from an economic point of view, when we're dealing with, again, the super conductor/super collider, the space station, they are of such magnitude that they really will require international participation.

If you look at that further, we're faced with the situation that we start talking about Mars and moon programs and other programs, we're going to run into hundreds of billions of dollars, where do we go? Can any country afford to do it? Should we be taking advantage of the minds that we're talking about and how does that fit into the program?

You might want to talk a little bit about that now as you see it.

Mr. Shattuck.

Mr. SHATTUCK. I'm going to defer to my—

The CHAIRMAN. Just one more point—

Mr. SHATTUCK. —colleague on that.

The CHAIRMAN. The point that you made earlier—I've forgotten who made that point—we've been aware of that, that the number of doctorates that we're working on here, being roughly 50 percent or better from other nations, and the question is, that information is being—has to be imparted to them to be able to secure their doctorate in the first place. Some of them want to stay here, of course, but some go back home, so information is transferred anyway, of much more advanced technology. That's the point I want to talk about.

Mr. SHATTUCK. Well, it's a very important point. I think, obviously, underlying it all is what we can do better to encourage our own young people to enter the engineering field and I think there are a number of somewhat hopeful signs on that front.

The new emphasis on mathematics and science at the secondary school level and some of the school reform issues that are very much alive in the country today, I think speak to that, but in the interim, if we are to be competitive in a number of key industries

where we rely on people with engineering doctorates, there is no question that it is important for us to use the expertise that has been created by the education of foreigners in our midst and, as you say, Mr. Chairman, education that has gone on in all areas without restriction, so it is somewhat ironic that when they get to the end of the line and we want to use their services in our own industries, that we encounter various kinds of immigration difficulties in ensuring that they get into the industrial sector.

The CHAIRMAN. Uh-huh.

Mr. DINNEEN. I don't have anything to add to what Mr. Shattuck said about the importance of increasing our own people taking science and engineering and there's some encouraging signs that the students who are studying mathematics and science in high school have increased slightly and, therefore, that should lead, we hope, to more going into college and graduate school and we do—have depended a great deal on the foreign students who come here and study and teach in our universities and then stay—many of them stay and work here and have been important in our economic development.

With respect to your question about joint programs, which I think are going to become important in the future and you've already mentioned several, I would just highlight one where I think we can probably get started very quickly and there are a number of encouraging signs that we have started that, both in the private sector and the universities and also in the government, and that's in the whole area of the environment, the technology for the environment.

These, of course—some are local problems, such as water and so on, but many of them, such as the global warming issue and so on, are really global problems and if we can encourage more joint efforts and transfer of technology in that area, we should not run into any difficulties with the export control, then we can get some working relationships between scientists and engineers and people in the private sector, which then could lead to further cooperation.

I think our American companies are doing a great deal in this already with their overseas subsidiaries and with acquisitions in Europe and so on, so there's a good deal of that which is already going on in the private sector.

The CHAIRMAN. Dr. Park?

Mr. PARK. Yes. We—of course, using foreign scientific talent is almost what we do best in this country. Something like a third of all of our Nobel Laureates in science were—were not born in the United States. Something like 50 percent of our graduate students in science today are foreign students. In recent years, a great many of these have been from the People's Republic of China.

We now find that that supply of graduate students may be cut off and we'll be looking in other directions and perhaps Eastern Europe and other places. We have benefited enormously from this influx of foreign talent.

With the Soviet Union, we face a special opportunity. In the case of China, we were training their students, many of them returning to China and benefiting that nation's progress. In the case of the Soviet Union, Soviet theoretical scientists are among the best in the world. We have an opportunity here to learn from them, as

well, and so I think it's a very special opportunity that we have in this case.

But as we—

The CHAIRMAN. Isn't that ironic, if the gentleman would yield, isn't that ironic that the whole focal point of the COCOM effort is because quote, unquote of the communist government of the Soviet Union?

Mr. PARK. Which it isn't anymore, as near as one can tell. It's hard to know what it is. It's clearly been a period of transition and I don't know where that transition's going to wind up, but yes, it is ironic. As we enter into cooperative ventures, we still have to be certain that the projects we enter into are worth doing. We—the worst mistake that we could make is to sort of invent projects to cooperate on.

There are natural projects. Space science is certainly one of the areas in which our strengths compliment one another. Plasma fusion is clearly another. But I think we have to pick those areas very carefully.

The CHAIRMAN. Okay.

We want to thank the panel very much for your patience in being with us this morning. You've been a big help to us and we thank you very much for joining us this morning.

The third and final group of witnesses this morning is Dr. Lothar Griessbach, German Industry and Trade, Washington, D.C.; Dr. Ronnie Goldberg, Senior Vice President for Policy and Program, U.S. Council for International Business, New York, New York; and Mr. Albert W. Moore, President of the National Machine Tool Builders Association, the Association for Manufacturing Technology.

I want to welcome the witnesses and thank you for your patience and suppose we call on Dr. Lothar Griessbach first.

ATEMENTS OF LOTHAR GRIESSBACH, GERMAN INDUSTRY AND TRADE, WASHINGTON, D.C.; RONNIE GOLDBERG, SENIOR VICE PRESIDENT FOR POLICY AND PROGRAM, U.S. COUNCIL FOR INTERNATIONAL BUSINESS, NEW YORK, NEW YORK; AND ALBERT W. MOORE, PRESIDENT, NATIONAL MACHINE TOOL BUILDERS ASSOCIATION, THE ASSOCIATION FOR MANUFACTURING TECHNOLOGY, MCLEAN, VIRGINIA

Mr. GRIESSBACH. Thank you, Mr. Chairman.

I would like to thank you for having us participate in this hearing. I have prepared and submitted a written statement which I would appreciate to be included into the record.

The CHAIRMAN. No objection, so ordered.

Mr. GRIESSBACH. Thank you, sir.

I also would like to mention that, from our office, Mr. Schneider, is with me. He is the expert in the office on export controls and is available for questions also.

I will not repeat the written statement which you have before you, but will try to reflect on some of the questions that have been asked and some of the remarks that have been made here this morning.

It is my obligation, I understand, to bring to your attention that I'm registered as a foreign agent. The last statement is available. I have it with me should the committee desire to inspect it.

In turn, the organizations we represent are obviously private organizations in Germany and so this office here, which I have the privilege to be heading, is speaking on behalf of the entire German industry.

There is a great deal of experience, as you may imagine, over the last 40 years that German business has had in dealing with these Eastern European countries and I take it to be a reflection on this fact that Germany was mentioned here several times this morning.

But initially, I would like to maybe rectify some perceptions that are out in the public about the magnitude of this involvement. Sometimes, as we hear these remarks, we feel that the participation of Germany, the cooperation of German industry with Eastern European countries, including the German Democratic Republic, is somewhat over-estimated.

The trade with Eastern Europe with the total of all the State trading countries is well below 6 percent of the German total export volume and import volume, consequently, about the magnitude of our trade with Switzerland.

On the other hand, this reflects a position that we have been taking—that some of my superiors have been voicing here over the last several months, and particularly the Chief Executive of the BDI, that it is beyond the reach of German business and I would think also the German Government institutions to finance and to support this process of economic development alone.

It is a position that has been taken repeatedly and I would like to take the opportunity to repeat it here that we strongly desire that other countries, institutions, industrial corporations will participate in this process and provide capital and technology that is needed over there.

Another detail which struck me this morning, yes, as mentioned by Ambassador Wendt, there is almost no border anymore, fortunately, between the two parts of Germany, but I would like to state here that West German companies are law-abiding and that they're still bound by the COCOM consensus as it is implemented in the Federal Republic of Germany and, aside from—if I may remind you—aside from border controls, there's the control at the source of manufacture or distribution and the companies who have years of experience with these controls are currently practicing them as they have been practicing them before.

In briefly going through what I have submitted here for the record, we are—and let me repeat this also—gratified with the progress which has been made, which we hope will be implemented and finalized by June. What, consequently, is necessary to really focus on the core list and there are a number of questions still open, including what the contents of this core list will be. We feel that a lot of work needs to be done.

What has been proposed by the German Government and is reflected, of course, in the U.S. proposal in turn is an approach taken by some companies in Germany to get going on the immediate needs, so you will find—and I feel this is necessary with our American friends, who will testify here later, to state that these propos-

als, in particular in the area of telecommunications and machinery, are not really any future prospective and do not reflect where we would like to be 10 years from now.

They reflect the immediate needs of some companies to implement certain contractual proposals and we understand that the U.S. industry, that is in many areas the technological leader, and has completely different ideas on what needs to be done in these countries, is going far beyond our proposals.

We would like to see those proposals, of course, but we are happy at the same time that we—our companies can start working on the basis of these proposals.

In looking I made this remark and would like to repeat it—there are no hard marketing data available. You can—sometimes the population figures are quoted. You're talking about a new market of roughly 400 million people, but the hard core study of various sectors has not been done. As far as it has been done, it's not available, so we are, to some extent, extrapolating of the magnitude of these economies that we're dealing with without really being able to tell how many machine tools we will be able to sell whether in a year or two on different circumstances.

But in this context, another observation, which is not in the statement here. I mentioned the computer market, in particular for PCs, and I invite you to consider that most of this market probably will be taken advantage of by U.S. subsidiaries which are positioned in Western Europe.

We have at the current economic situation about 30 percent—over 30 percent of our sales in West Germany contributed by companies which are foreign owned and we hope and count on this being reflected in East Germany and other parts of Eastern Europe during the time to come.

The U.S. industry, in particular in computer manufacturing, is very well positioned to take advantage of this situation.

Substitution for these hard marketing data, you really indicated you would like to have, I have put down here a number of factors of a more political nature. If you like, the most important one, which I would like to repeat, is that with the initiation of this liberalization which we have hoped for for some time, there is—as is already visible—there is a change in perception.

Before a good many contractual proposals were not even developed or not submitted for approval under the COCOM procedures because there was no expectation that they would be passed. So as the system moves on and opens up to the necessities of economic development in the East, you will see that more companies will look at this market as they would look at their markets in South America and somewhere else. So—and it is important that with the development of this core list, this drive is maintained, that there is really a change in perception from the side of the responsible administration here in the United States and West Germany, but also from the side of the companies who should be interested in this market.

GDR, another item which came to my mind, somebody was voicing concern—I apologize for not remembering who it was—that the GDR may be sort of an open wound, bleeding wound, because of the contractual obligations that they have with counterparts in the

Soviet Union. You have to understand that the—although there is, as is well known, long-term planning cycles under these planned economies, that the actual execution of contractors is of a much shorter term.

So let's assume, I don't have any details on it, that GDR companies, State-owned companies have negotiated contracts last year or earlier this year. In all likelihood, they will expire, will be executed at the end of the year and next year you can deal under different circumstances, so that the chances that something will be diverted that shouldn't be diverted are relatively slim.

We do and have said this before at other occasions, want to keep this market open. In the interests—one, of course, of the companies involved, but secondly, also in the interests of promoting this political development that is under way.

Almost 80 percent of the trade of these countries, East Germany, as well as Hungary, Czechoslovakia, and Poland, is executed with the USSR. And cutting this off through differentiating between the Soviet Union and those countries would impose a new economic impediment and new restrictions which hadn't existed before. So it would be counterproductive to only move into, say, the second tier of States and then cut off the Soviet Union. If you have in mind that what is at stake here is not only profits for companies, but the political—political and economic development in these countries, then, of course, I think—and with this observation, I will conclude. We will have to have a continued discussion, which is under way, as I understand it, about to what degree this differentiation has to take place. I think it's very easy to agree that you do not want to sell, say, rocket technology or super computers, certain types of obviously sensitive technology, but then, on the other end of the spectrum, there's some things you could easily come to agree on.

What I think would be difficult to try to come up with a principle that one party says we do want to differentiate; the other one doesn't want to. What needs to be done is really talk about technical details.

And the same is true for this notion that is becoming prominent under the current circumstances that you have to differentiate between assembly and manufacture. Again, if you take the goal seriously that these economies need to be developed, I think you have to go very far in allowing them to manufacture. It doesn't make any economic sense to ship all small parts that you need, for instance, to establish a telephone system through Siberia. A lot of this material on the economic consideration has to be manufactured over there, but the line between assembly and manufacturing is not a matter for political definition.

You can—one item you can consider as being assembly and the other one—assembled and the other one being manufactured. So there's a danger there to engage in a discussion on a principle which, under economic terms and from the perspective of a business is not sustainable.

If I may, I will conclude with the remark that, in particular, in Germany, we are very well aware that COCOM, as other security-related activities, have contributed to the situation that we have now. And we're very grateful for their support, the cooperation

over the last few years, and we would like to see it continue in a fashion that is adapted to the new situation.

Thank you.

[The prepared statement of Dr. Griessbach follows:]

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Testimony

submitted to the
Committee on Science, Space and Technology

on
"The Effect of Changing Export Controls on Cooperation in Science and Technology"

by
Dr. Lothar Griessbach
Representative for German Industry and Trade

May 16, 1990

My office represents the Association of German Chambers of Industry and Commerce (DIHT) and the Federation of German Industries (BDI).* These organizations are indirectly formed by the entirety of German business. Both organizations actively participate in the formation of economic policies in the Federal Republic of Germany and contribute to the international discussion on trade policy issues. We appreciate the opportunity to be heard in the United States Congress and respectfully submit the following comments.

1. German business supports the principles of Cocom but favors the liberalization of controls.

Discussions focusing on streamlining and reducing the Cocom control list and reforming the Cocom process have gained intensity due to the recent political reforms in Central and Eastern Europe. As far as Germany is concerned the opening of the Wall in November 1989, the elections of March 18, 1990 in the German Democratic Republic as well as the German-German and international negotiations on German unification have created a dramatic sense of urgency. German business has long maintained that the impact of viable and profitable economic and commercial relations extends beyond the business sphere. As exemplified by current events, the exchange of merchandise, technologies and modern economic concepts contributes significantly to the development of democratic societies and consequently to world peace.

We have therefore pressed hard for the implementation of policies which the U.S. Government has contemplated for a number of years, namely to substantially reduce controls and focus on militarily significant technologies.

We have asked for U.S. leadership because of the significance of the U.S. contribution to military security and because of its international commitments, including the U.S. role in Central Europe.

2. The current U.S. proposals reflect positions German business has promoted over the last several months.

Since the United States proposal for decontrol of certain items is largely in accordance with proposals the government of the Federal Republic of Germany has submitted in cooperation with other western allies and with the support and cooperation of German business, we are pleased to note that these proposals accommodate the immediate need to expand economic cooperation with Eastern European countries.

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* Note: I am registered with the Department of Justice (DoJ) under the Foreign Agents Registration Act (FARA) of 1938, as amended. The BDI is located at Gustav-Heinemann Ufer 84 - 88, 5000 Cologne 51; the DIHT is located at Adenauerallee 148, 5300 Bonn 1. The registration under FARA, which is available for public inspection at DoJ, does not indicate the U.S. Government's approval of these comments. A copy of my most recent registration is available for the Committee's review.

We are particularly gratified that the U.S. Government supports German unification and the implementation of temporary and immediate measures to integrate the German Democratic Republic by accepting technical parameters and administrative procedures allowing the development of specific urgent projects in the GDR, e.g. a compatible telephone system.

Assuming these measures will be adopted in June 1990 - with some modifications - we can now focus on the second phase of this process, the development of a core-list which the U.S. Government has proposed to finalize by the end of 1990. Before dealing with this issue and before submitting a few notes on finalizing the current proposal we would like to submit some observations on the increased potential for Western companies.

3. The potential for contributing to economic development of Central and Eastern European countries will increase significantly.

a) At the present time, to the best of my knowledge, no hard marketing data are available on these large and potentially very different markets. This statement reflects publicly available data only, including data of German trade associations and of our two sponsoring organizations. Individual companies which have been exploring these new business opportunities for some time do not share their data for obvious reasons. Since the current proposals are based in part on their assessment of the market, it is safe to assume that these proposals reflect real business opportunities.

There are, however, some more general estimates available on the potential for sales created through the liberalization of certain product categories. The three priority categories chosen for liberalization because of their economically strategic significance - machinery and machine tools, telecommunications and computers - can be substantiated by some examples.

There are, for instance, 25.9 million main telephone lines in West Germany compared to 1.6 in East Germany. Within a relatively short period of time the number of main lines and supporting technical installations in the GDR will more than quadruple (see attachment). The market for personal computers in East Germany alone is estimated at 400,000 units. Plant equipment (machinery and machine tools) is not state of the art in any East bloc country and is in some cases decades behind western standards. In addition, there is no modern banking system in place and consequently no computerization of banking services. Shops operate with unsophisticated cash registers; airline reservation systems are incompatible with western technological standards. Production automation exists only in a few plants mostly procured from western companies. Testing and measuring equipment and scientific instruments do not generally meet western standards.

These deficits could translate directly into commercial potential provided the list revision under consideration allows the implementation of specific contract proposals known only to the companies writing them.

3

These conclusions derive from the fact that the entire region is underdeveloped. Furthermore, trade and investment patterns between western industrialized nations indicate that trade and investment is largest between highly developed and industrialized countries. Consequently an incremental increase in the technological sophistication of products which can be traded or installed will in all likelihood result in an increased volume of business.

This assumes that the impediments to business were largely due to the cap on technology exchange. There are a number of other impediments to be dealt with later.

b) Some other improvements indirectly resulting from Cocom liberalization have to be listed.

Numerous changes in the modes of operation and management are possible which will significantly improve trade and investment.

- As a result of Cocom and because of the imposition of ideologically motivated guidelines the entire region has been operating as a secluded and largely self-sufficient system. Foreign licensing, joint ventures with western companies or other forms of common cooperation were not economically feasible or outright prohibited..

- The limitations of access to western technology due to restrictions imposed by East and West alike on travel and exchange of technological literature prevented cross-fertilization.

- As exemplified by the development of data processing and equipment manufacturing, capabilities not available through direct procurement from the West had to be developed in the East at extremely high cost and with inferior results.

- The typical type of business transaction involved negotiation and execution of contracts with state trading agencies based on medium term - usually five year - planning and executed within a one year time frame. Lacking any flexibility, joint development of data on market requirements and development of products suitable for the markets was excluded.

- The lack of sophisticated data processing equipment and communications links, including the elemental lack of telephones and telephone lines , has made it virtually impossible to operate subsidiaries as part of an integrated transnational production and supply system. Transmittal of blueprints, centralized warehousing, "just-in-time" procurement of parts or technical support, to name a few features of contemporary division of labor, could not be achieved for the simple lack of data processing or communications lines.

The change in these patterns translates into increased potential for cooperation with western companies. In the future a "normal" pattern can be expected, that is establishment of subsidiaries, trade in more sophisticated products, and stronger

demand increasing with further sophistication of consumer products and capital investment goods.

c) The most significant contribution to increase business potential may be a change in perception. It is critical, particularly in this context, to note that the development exemplified by the U.S. proposal must be sustained, namely through the development of an acceptable core-list. Assuming that this positive mode will continue, businesses will change attitudes and start to look at Eastern European markets as they look at other markets. The stifling of market exploration and planning by the virtual impossibility of translating ideas into marketable products will diminish with a gradual normalization of economic relations, that is a reduction of the list to the core of militarily significant items.

4. There are significant impediments to the development of business with Central and Eastern European countries aside from export controls which must be kept in mind.

In the five years since the advent of Glasnost and Perestroika, German business has observed no improvement in sales potential. On the contrary, business opportunities have diminished in certain sectors. The primary reasons for this phenomenon are the continued lack of hard foreign currency as well as the disintegration of outdated management structures and the slow or non-existent substitution by alternative decision making. These factors are unrelated to Cocom, but have to be considered when assessing the business potential. With gradual reduction of export controls these factors may become more visible as the two primary causes for limited development.

As business relations normalize, including the unleashing of business potential from unreasonable restrictions, these basic conditions should also improve.

Particularly burdensome is the poor infrastructure already mentioned above.

5. The conclusion of the development initiated through the U.S. proposals requires a positive definition of a number of issues such as improvement of certain technical parameters, transfer of manufacturing technology, inclusion of the Soviet Union and the improvement of cooperation in R & D, and above all the recognition that adaptation of the Cocom system is a continuing process.

a) German industry has to reserve final judgement on the technical parameters as long as they are not fully studied or known. It is crucial for sustaining this positive drive to arrive at acceptable definitions of the core-list. A first assessment of the proposals brings a few details to mind which should be changed. The proposed de-control of the processing data rate (PDR) of 275 e. g. is probably too low. It appears that a rate of 2000 PDR would be necessary to establish compatibility with systems in use in the western World.. Other restrictions such as the denial of making ISDN technology available can only be accepted for the present time and will have to be further studied. Whether companies offering airline reservation systems or banking systems can develop viable proposals under the current data has to be determined in detail by those companies.

b) It is crucial for obtaining the desired results of opening business opportunities and contributing to the development of the economies in question to allow varying degrees of manufacturing or assembly. According to our information the issue has been recognized and will be dealt with within Cocom. We would like to caution against an overly optimistic expectation that an uncontested and clear distinction between assembly and manufacturing can be reached. Moreover, limiting manufacturing operations to "assembly" would subject business plans to another alien or unreasonable restriction unknown under normal circumstances. Obviously contracts for delivery, co-production or other forms of implementation of a certain project would be based on economic criteria. If the sale of manufacturing technology would serve the purpose this would be done. If local assembly would be more efficient or desirable - for instance for the preservation of commercial secrets - this would be the solution. To impose a political and security criterion would make the economic viability incidental.

As far as specific projects are concerned, a consensus may be possible even from opposite points of departure from the principle of allowing or disallowing assembly or manufacture. In any case the distinction is a significant one and could cause severe problems.

c) While recognizing the importance of developments in the Soviet Union for most of the developments in Central and Eastern Europe German business is concerned about decoupling the Soviet Union from this process of economic integration. From a purely commercial point of view the conclusion is obvious that any differentiation establishing a new, up to now non-existent, barrier between the Soviet Union and its former allies, is undesirable. Not only do the economies in Poland, Czechoslovakia, Hungary and the GDR depend on trading with the Soviet Union but this is also the case for the Soviet Union. Restrictions on these links would hurt all parties concerned.

Security considerations in our view should be narrowly defined.

d) Some clarification appears to be necessary on scientific exchange. In the past international conventions, joint R & D between companies and travel have often been under scrutiny, producing a stifling effect. A change in official attitudes and perceptions in this area would also be helpful.

Companies protect leading edge technologies out of self interest. This will remain so or become even more important with the elimination of export controls. As far as scientific development is concerned one should keep in mind that there are severe shortfalls in implementation and management, particularly in the Soviet Union. Even under the best of circumstances the translation of scientific advances into new products is difficult. The issue of maintaining a technological lead is not particularly acute vis a vis the Soviet Union and other Eastern or Central European countries.

Telecommunications Statistics (base 1986)

	population	main telephone lines incl. public telephones		Telex		international calls	domestic calls
	(mio)	(mio)	%	(thsds)	%	(mio)	(mio)
FRG	61.0	25.9	44	163.8	0.27	468	10000
GDR	16.6	1.6	10	16.5	0.10	13	780
CSSR	15.5	2.0	13	-	-	8	420
Poland	37.5	2.5	7	29.6	0.08	4	1300
Hungary	10.6	0.7	7	10.8	0.10	13	140

Percent figures refer to total population

Data for Bulgaria and Romania not available

Source:

ZVEI FV I+K

March 7, 1990 TA:hm

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Lothar Griessbach is the Representative for German Industry and Trade (Association of German Chambers of Industry and Commerce - DIHT - and Federation of German Industries - BDI -) in Washington, D.C. since 1976.

Prior to that, Mr. Griessbach served as Staff Director for the Free Democratic Party Caucus in the Parliament of Berlin (West). After completion of his legal studies he spent five years in private practice working as corporate counsel for a conglomerate of companies in that city. Mr. Griessbach holds a PH.D. in public international law from the University of Berlin and an M.A. degree from the Fletcher School of Law and Diplomacy in Medford, Massachusetts.

The CHAIRMAN. Thank you very much, Dr. Griessbach.

Dr. Goldberg.

Ms. GOLDBERG. Thank you, Mr. Chairman.

I, too, will submit a written statement for the record and try to confine my brief remarks this morning—or this afternoon, to some of the issues raised earlier in the hearing.

The CHAIRMAN. Your statement will appear in full in the record. No objection, so ordered.

Ms. GOLDBERG. Thank you.

The members of the U.S. Council, too, agree that COCOM remains essential to maintaining U.S. national security. Indeed, if COCOM collapses because the United States is unwilling or unable to take enough of a lead in reforming the organization, the competitive disadvantage of American technology exporters, vis-a-vis their European and Japanese counterparts, that exist now will be even greater. And this at a time of expanding markets in Eastern Europe.

This is why the U.S. Council has joined virtually every major U.S. business group in welcoming the administration's proposed reforms on COCOM, but we see them as only a first step towards the reforms necessary to ensure that the organization remains effective and that U.S. national security and economic interests are served by it.

The proposals have raised some serious concerns among our members and I'll mention briefly just three of those concerns today. First, from the details available to us, it appears that the decontrol envisioned by the administration does not go nearly far enough. For example, the proposals do not address such technologies critical for modern communications, telecommunications, infrastructure, as common channel signaling and network management and control. They permit only local area networking, networks with lines of less than one mile.

Telecommunication systems for such vital areas as banking, an area that we've already discussed today, require wide area networks. The administration's proposals for computers are completely at odds with the needs of even modestly-sized banking systems. Small- and medium-sized banks just here in the Washington, D.C., area, for example, currently use computers that are at about three times the performance level of the current China Green Line, the most liberal level proposed for decontrol of such computers.

Poland and Hungary have national banking systems. They would not even be able to provide basic checking and savings services at Green Line levels.

Secondly, a second concern we have lies in the area of the administration of U.S. unilateral export control policy, as governed by the Export Administration Act. We've heard reassuring words this morning, particularly from the Department of Commerce, about reform of the export administration system here in the United States. But to answer a question you asked earlier today, Mr. Chairman, we do not believe that American companies operate on a level playing field, vis-a-vis our COCOM allies in this area.

The United States still maintains unilateral controls. We still maintain reexport controls, West-West licensing requirements, and we work under an interagency system that sometimes imposes sig-

nificant delays in licensing system. All of these things disadvantage U.S. companies, vis-a-vis their COCOM competitors and they will continue to do so, regardless of COCOM reform, unless the U.S. system is reformed in a consonant manner.

Thirdly, we have a concern based on our reading of the administration's proposals on core technology, and specifically, we are interested to learn more about the administration's views on the relationship between this new core technology approach that they have embraced and the military critical technologies exercise, which has been going on in the United States for some time now.

We're troubled, frankly, at the suggestion in the administration proposals that the military critical technologies list will be "a vital guide in building this new core technologies list." Those of us who have followed the progress of the critical technologies exercise since 1976, when it was launched, will understand our concern that basing the U.S. contribution to a new core technology exercise on the MCTL may prove simply impracticable. Should the U.S. embark on this new exercise, intending to base its participation mainly on the the MCTL, it would face, in our view, at least two very serious practical problems.

First, it is unlikely that agreement on core technology could be reached within the ambitious time frame set by the administration and dictated by the pace of events, as well, and secondly, we think there would be great difficulty in producing proposals for a core list acceptable to our COCOM allies. We know that there are very great differences in the views between our government and the governments of our COCOM allies on what constitutes a critical technology in the military sense.

We believe, therefore, that the U.S. must be at least willing to consider a fundamentally new concept and set of criteria for core technologies.

If COCOM could, indeed, implement meaningful reforms, western business would be far better placed than it now is to participate in the economic reconstruction of the Soviet Union and Eastern Europe. This is not to say that the fate of Eastern European and Soviet economic recovery lies solely or even predominantly in the hands of the West. Reconstruction in this region is most directly dependent on these countries' own policies, on their embarking on the comprehensive economic reforms necessary to achieve fully functioning market economies.

Assuming, however, their willingness to put reform policies in place, western telecommunications and computer technology will be vital to their success. By enabling the free flow of information and ideas, modern telecommunication systems play a vital role in stimulating democratic and economic reform. They also make the reversal of such reform more difficult.

We need only recall the role that telecommunications technology, such as telephones and fax machines, simple things, played in sustaining the Chinese students' demonstrations last year.

Thus, to reform their economies, Eastern European countries must be able to integrate their civilian networks with the rest of the world, through systems that conform to internationally developed standards, not through second-rate of technology obsolete in the West.

Without such systems, the economic costs to their PTTs and ultimately to both their business and consumer and users will be much greater and western business will not be able to fulfill the needs that they expect in their various joint ventures there.

Information technology is equally important to the sustained economic growth of these emerging democracies. To go back to the example of the banking system, it's impossible to imagine a growing free market economy without a modern and efficient banking system.

COCOM computer controls at present require we understand that West German banks now operating in East Germany can function only by loading tremendous amounts of paper every day in trucks, transporting the paper to West Germany for data processing and then shipping it back the next day. You cannot reform an economy under these circumstances. Business cannot operate under these circumstances.

In conclusion, I'd like to note—or I'd like to emphasize that we think it important to remember that COCOM has served remarkably well over the past 40 years in protecting America's national security interests. It is now facing perhaps its greatest challenge, adapting to changes, stunning in their speed and magnitude, that have the potential for affecting the ways in which every American lives and works.

We have no doubt that the organization is capable of adapting to new circumstances. Indeed, it has probably already changed more in the past year or so than in all the previous 40. However, COCOM still has far to go if it is to remain effective and for this, it needs the leadership of the United States.

Thank you.

[The prepared statement of Ms. Goldberg follows:]

United States Council for International Business

STATEMENT
on behalf of
THE UNITED STATES COUNCIL FOR INTERNATIONAL BUSINESS
on
U.S. POLICY IN COCOM
before the
U. S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
by
Ronnie L. Goldberg
Senior Vice President
May 16, 1990

Good morning, Mr. Chairman. My name is Ronnie Goldberg, and I am Senior Vice President for Policy and Program at the United States Council for International Business.

The U.S. Council represents American business positions in the major international economic institutions, and before the Executive and Legislative branches of the U.S. government. As the U. S. member of the International Chamber of Commerce, the Business and Industry Advisory Committee to the OECD, and the International Organization of Employers, the U.S. Council is the American business group that officially consults with the key intergovernmental bodies influencing international business. Its primary objective is to promote an open system of world trade, finance, and investment.

I am honored to be here to speak to you about U.S. policy in CoCom on behalf of the Council's

membership, which includes America's major technology exporters. I understand that your Committee is particularly interested in the competitiveness of the three high-technology industries that have been designated as priority areas, i.e. machine tools, telecommunications, and computers. Because the machine tool industry is itself represented on this panel, I will confine my specific remarks to the latter two industries.

The U.S. Council believes that a radically new approach to multilateral export controls is vital to U.S. national security and economic interests:

- We are facing an historic opportunity to bring the countries of Central and Eastern Europe into the family of democratic market economies. Modernizing CoCom in response to changes in this part of the world should be part of a fundamental reassessment of how U.S. national security interests can be advanced at a time when formerly Communist controlled countries are transforming themselves into pluralist non-Communist democracies.

- Unless the U.S. plays a leading role in modernizing CoCom, permitting it to respond to the fundamental changes in the threat to U.S. national security previously posed by the close relationship between the regimes of Eastern Europe and the USSR, we are convinced that CoCom rules will increasingly be ignored. Indeed, the organization may even be disbanded. Should CoCom cease to function, the U.S. will lose an important instrument for protecting its national security interests.

- If CoCom collapses because the U.S. is unwilling to ease its export control policy, the competitive disadvantage of American technology exporting companies vis-a-vis their European and Japanese counterparts will be even greater than at present -- and this at a time of expanding markets in Eastern Europe.

The U.S. Council conveyed these views to the Executive Branch in early April. More recently, we have joined the other major U.S. business groups in welcoming the Administration's proposals on CoCom -- if only as a first step toward the reforms necessary to ensure that the organization remains effective and that U.S. national security and economic interests are served by it. However, the proposals have raised some serious concerns among our members. I will deal with three of these concerns this morning.

First, from the few details released so far, it appears that the decontrol envisioned by the Administration does not go nearly far enough. The areas designated by the Administration for complete elimination from the Industrial List account for, at most, 15 percent of CoCom licenses. The vast majority of licenses are granted in the priority areas -- machine tools, computers, and telecommunications -- which are slated for less drastic reduction. At least in the latter two areas, the suggested parameters for decontrol are inadequate.

For example, from what we have seen, the proposals do not seem to address such technologies critical for a modern telecommunications infrastructure as common channel signaling, and network management and control. Thus, the Administration proposals permit only local area

networking -- networks with lines of less than one mile. Telecommunications systems for such vital areas as banking obviously require wide area networks. Similarly, the Administration proposals for computers are completely at odds with the needs of even modestly sized banking systems. Small and medium sized banks in the Washington D.C. area currently use computers that are at about three times the performance level of the current China Green Line, the most liberal level proposed for computers. Poland and Hungary have national banking systems, and would not even be able to provide basic checking and savings services at the Green Line levels.

These inadequate decontrols relate directly to our second concern. The critical reaction from some quarters of the Department of Defense to the Administration's own proposals suggests to us that those in the Pentagon who will be responsible for implementing the new CoCom proposals have not yet "bought on" to the changes in the strategic assessment on which they are presumably based. Not only does this resistance make it likely that time consuming inter-agency disputes over further promised decontrol will persist, but more fundamentally it leaves unclear the extent to which U.S. export control policy will in fact be administered in a manner responsive to the changing nature of the security threats posed by the USSR and the emerging East European democracies.

We believe that it is essential that the U.S. permit CoCom to reclassify for export control purposes those East and Central European countries that have established adequate safeguards against diversion, with the objective of eventually treating them like any other non-CoCom 5(k) countries that have adopted CoCom-like export controls (e.g. Sweden and Austria). For these

countries, CoCom could, for example, agree to eliminate current technical limits in favor of an increased emphasis on end user and host country safeguards.

A third problem centers on the fact that neither the concept behind nor the means of implementing the "core technology" approach have been well articulated thus far. We are particularly interested in the Administration's view of the relationship between "core" and "militarily critical" technologies, and troubled at the suggestion in the proposals that the Militarily Critical Technologies List (MCTL) will be a "vital guide" in building the core technologies list. Those who have followed the progress of the critical technologies exercise since its inception (in the 1976 Defense Science Board study, commonly known as the Bucy Report) will understand our concern that basing the U.S. contribution to new core technology exercise on the MCTL may prove impracticable.

The Bucy Report launched an effort to develop a means of assessing military risk which rests on objective technological criteria and is therefore relatively immune to shifting political opinion. This effort was predicated on the assumption that one can identify for stringent control a relatively small subset of technologies on which U.S. military technological superiority is most dependent. In 1979, Congress mandated that the Critical Technologies Exercise, as it came to be known, result in a MCTL, a list specific enough to guide validated licensing decisions. Many in both business and government hoped that the MCTL would be short and non-controversial enough to replace both the U.S. Commodities Control List and the CoCom Industrial List.

The result, after protracted analysis, was a MCTL so voluminous -- it is said by some to constitute a "Modern Technologies List" -- that it reenforced rather than dispelled the impression that the views of the U.S. Department of Defense on the scope of military criticality remain controversial both within the U.S. Government and between it and the business community. There is no question that these views differ substantially from those of our CoCom allies. Thus, should the U.S. embark on a new "core technology exercise" intending to base its participation on the MCTL, it would face at least two serious problems: the unlikelihood that agreement could be reached within the ambitious timeframes set by the Administration and dictated by the pace of events; and the difficulty in producing proposals for a core list acceptable to our CoCom allies. We believe that the U.S. must at least be willing to consider decoupling the core technologies exercise from the MCTL and accepting a fundamentally new concept and set of criteria that might focus on a small number of process (or "enabling") technologies to be controlled for export to the USSR.

If CoCom does indeed implement meaningful reforms along these lines, Western business would be far better placed than it is now to participate in the economic reconstruction of the Soviet Union and Eastern Europe. This is not to say that the fate of East European and Soviet economic recovery lies solely or even predominantly in the hands of the West. Reconstruction is most directly dependent on these countries' embarking on the comprehensive economic reforms necessary to achieve fully functioning market economies. Unless such reforms are undertaken, not only will the prospects for economic progress and democratization be jeopardized, but the promise of new markets for U.S. goods and technologies will also remain largely unfulfilled.

Assuming the willingness of the governments to put reform policies in place, however, Western telecommunications and computer technology will be vital to their success.

By enabling the free flow of information and ideas, modern telecommunications systems play a vital role in stimulating democratic and economic reform; they also make the reversal of such reform more difficult. We need only recall the role that telecommunications technology, particularly telephones and fax machines, played in sustaining the Chinese students' demonstrations last year. At present, the telephone systems in Eastern Europe and the USSR are extremely out-of-date, with equipment often of pre-World War II vintage. No system in this part of the world has digital switching, and the wait for basic telephone service ranges from 8 to 14 years. To reform their economies, these countries must be able to integrate their civilian networks with the rest of the world, through systems that conform to internationally developed standards. Without such systems, the economic cost to civilian PTTs, and ultimately to both business and consumer end users will be much greater. In an environment of severe economic constraints, this price will be too high to pay, stifling the development of telecommunications infrastructure, which will in turn have a downstream effect inhibiting other infrastructure improvements.

Information technology is equally important to sustained economic growth. For example, it is impossible to imagine a growing free market economy without a modern and efficient banking system. Banking systems, as we have already noted, require computer technology. Because of CoCom computer controls, at present the only way that West German banks now operating in

East Germany can function is to put tremendous volumes of paper each day in trucks, to be shipped back to West Germany for data processing and returned. Similarly, a recent article in the Washington Post detailed the constraints on privatization and economic growth placed in Poland by the lack of a national banking network integrated into world credit and capital markets. In fact, in commercial environments, networking capabilities often generate critical productivity gains.

The decontrol of exports that would facilitate economic reconstruction would also benefit American companies and the U.S. economy, assuming of course that any benefits to U.S. business achieved through CoCom decontrol are not offset by U.S. unilateral or re-export controls, or licensing requirements for West-West exports. Any such benefits would also require that the U.S. administration of the export control system be streamlined so that U.S. companies are no longer perceived as unreliable suppliers as compared to companies from other CoCom member countries.

U.S. telecommunications companies have historically developed their technologies with the U.S. market -- the largest and most sophisticated in the world -- in mind. Because of their already substantial investment in R&D, U.S. telecommunications companies are most competitive at the higher end of the technology scale. Moreover, successful joint ventures of all kinds will require a modern telecommunications infrastructure. Western businesses engaging in joint ventures in Eastern Europe and the USSR must be able to communicate with their local customers, suppliers, and partners, and with their home countries in the same manner that they do in the West, relying

on such services as data communications, private networking, 800 services, and even basic credit card calling. Only a sophisticated telecommunications system can provide them with these services.

As in the case of telecommunications, computer technology is in a state of rapid accelerating change. Technology is perishable: if American companies cannot sell their current-generation products, they will not be able to develop the next generation (a process that entails enormous R&D expenditure). Thus, their ability to participate in emerging global markets is critical to their ability to fund the research necessary to remain competitive.

West European and Japanese companies are already aggressively pursuing markets in Eastern Europe, and the Asian NICs are not far behind. Our computer companies tell us that in their industry, presence in the market is the key to competitiveness. In the case of some kinds of equipment, the first companies to establish significant market share will benefit from customer loyalty and a broader base from which to expand. U.S. computer firms already enjoy some initial advantage in Eastern Europe, but absent export control liberalization, their lead will be squandered.

In this industry, we do not expect to see many manufacturing operations located in Eastern Europe, at least in the near term. These countries lack the skills base, capital, and the infrastructure at present to do quality manufacturing. Moreover, intellectual property protection problems and constraints on foreign investment dictate a "go slow" approach for many large

computer firms, with assembly operations as a likely first step. The introduction of value-added processes will be dependent on further export control liberalization.

In conclusion, we think it important to note that CoCom has served remarkably well for over forty years in protecting America's national security interests. It is now facing perhaps its greatest challenge: adapting to changes, stunning in their speed and magnitude, that have the potential for affecting the ways in which every American lives and works. We have no doubt that the organization is capable of adapting to new circumstances. Indeed, it has probably already changed more in the past year or so than in all the previous forty. But CoCom still has far to go if it is to remain effective, and for this it needs the leadership of the United States.

The CHAIRMAN. Mr. Moore.

Mr. MOORE. Mr. Chairman, thank you for inviting me to appear before your committee this afternoon and be the clean-up hitter. With me, I brought James H. Mack, who's sitting behind me, and he's the Vice President of Government Relations for the Association, and on the other side is Charles F. Carter, Jr., who's Vice President of Technology for the Association.

Our industry is the belt that holds up the pants of America's military and economic security and we build the machines essential to our military readiness and our ability to respond quickly and effectively in the event of national emergency. But, and probably even more importantly, we also build the products which underlie every other commercial product made.

This fact presents policymakers with a dilemma when they devise a workable export control list. On the one hand, it's critical to have an indigenous machine tool industry in order to build a viable and globally competitive domestic production capability, and on the other hand, we must be careful not to export technologies that will be diverted for military end uses that are unavailable from sources other than the United States.

Therefore, we must make certain that whatever export controls are put in place are multilateral in nature and uniformly enforced by our western allies. The Soviet Union has become the world's third largest importer of machine tools at over a billion dollars a year. However, owing in large part to our outdated export control policy, America's share of that market has fallen from about 15 percent in the mid-'70s to about 1 percent today.

In contrast, West German and Japanese suppliers are major suppliers to the machine tool needs of the Soviet Union.

I'd like to come back to this point a little later because in the earlier hearings, you asked a question that I'd like to come back and specifically address following my few formal remarks here.

It's essential that American manufacturers be given the chance to regain a piece of the expanding markets in Eastern Europe and the Soviet Union if we're going to compete successfully in the global marketplace for tomorrow. The 1990s are already characterized by two inexorable forces, technological advancement and the determination of people all over the world to be free. It's America's responsibility to foster this movement toward democracy.

This means providing the newly emerging democracies access to the materials, products and technologies necessary to rebuild their economies. Otherwise, they and the freedom movement will not survive.

This means, among other things, providing them with machine tools that are more current technologically. However, Mr. Chairman, before the United States can even begin to build and nurture these emerging democracies, something must be done to reform the cumbersome interagency process that governs U.S. policymaking and individual license decisions.

My written statement details the problems our industry recently encountered during the process of revising the machine tool control list for the first time in 16 years. The President ultimately came to the right decision when he proposed to decontrol machine tools with commercial end uses to the PRC Green Line. However, DOD

inertia on the issue almost caused the demise of the COCOM alliance.

Although not within this committee's jurisdiction, I would urge its members to support the Export Facilitation Act of 1990, H.R. 4653, which could reach the House floor, I understand, as early as next week. If passed, it would go a long way toward resolving the problems which characterize today's export control system.

What constitutes an appropriate core list of machine tool technologies? I don't know. I do know that by refusing to adjust the controls list core to reflect the development of generally available technology over time, the United States has attempted to control the export of virtually everything and has ended up controlling virtually nothing because of our allies effectively abandoning the multilateral effort.

The President's machine tool proposal reflects a compromise between the three realities of worldwide technological development, the need to restrict military uses of high technology by our potential adversaries, and western political will. If I were king, would I have drawn the line further along the spectrum of technology development so as to accurately reflect that which is readily available for commercial use today? Absolutely.

Is the President's proposal an appropriate list for tomorrow? Absolutely not. Can we really put in place a system in 1990 that is going to be relevant in the year 2006? That is as sure a prescription for failure as it was when we put in place a machine tool control list in 1974 and waited 16 years to revise it in 1990.

There must be a mechanism that regularly and frequently measures technological development and adjusts the core list accordingly.

The indexation provision in H.R. 4653 may provide the beginnings of such a mechanism.

Mr. Chairman, we cannot afford to let the world progress without us. We are truly in a global society in which we must encourage the freedom of others while we ensure our own security. This can only be done by recognizing that both technological and political realities change and then changing with them.

Mr. Chairman, that concludes my remarks as to the written statement that we've made, but I'd like to come back, if I may, and answer a question that you asked the first panel and Ambassador Wendt. And it had to do with why in the world is it that the—in 1988, the West Germans and the Japanese provided about $700 million worth of machine tools to the Soviet Union and the United States provided one?

First of all, Mr. Chairman, please understand that I'm not a professional association type. I came a year ago to this Association from the industry, where I've been in the trenches of the machine tool industry for over 30 years. I visited the Soviet Union many, many times, so I do know for what I speak.

The Soviet Union, in the fact that they are not dealing with an American machine tool industry, are concerned on, number one, how we interpret that control list. Our allies interpret the control list in the favor of export and we interpret the control list in favor of control. There are an awful lot of machines that come before the powers to be for review and it is easier to err in favor of control

than it is for export, and consequently, that's the position we've always taken.

I want to get back to the control list itself in just a moment because I was very concerned about some of the previous testimony. But let me say that there's another basic point. One has to do with the fact that there was no exception rule between '79 and '89, so a lot of the things that might have gotten to COCOM were not actually brought to COCOM's attention by the United States side because of this no-exception rule.

And a lot of our members in the association decided, well, it is so close and it will not go in our favor, that they didn't bother to submit any proposals. Again, the Soviets, knowing this, quite frankly, when it comes down to laying down orders for machine tools, it's a lot easier working with people who are more friendly in interpretation of these lists than it is with the United States side, so in a lot of cases, our members not even—never even got an opportunity to quote in a lot of these particular programs.

And I think if anybody's been watching what is going on in the Soviet Union right now, there's been an awful lot of joint ventures in the last several years that have been put together by the Soviets. There's roughly 40 joint ventures now going on with companies from all over the world, trying to help the Soviet machine tool industry, and over half of these, I might add, are coming out of West Germany.

Now, you put yourself in the position of the Soviets. You want to go buy machine tools. Are you going to deal with people you have joint ventures with and allowed freely to have joint ventures? Are you going to deal with people you know are easier to interpret their COCOM regulations? Are you going to deal with someone you're not sure how they're going to react? You must, like the United States always looks at political risk when they make a decision. Well, they, too, on the flip side, look at political risks and where would you put your support if your job was in jeopardy on the other side?

I want to come back, if I may, to the control list just to make a point. My colleague, Dr. Goldberg, commented about the industry she talked about. I want to talk about machine tools because I think they're similar examples and I want to talk about personal experience.

Before I came to this job, I was in the industry, as I pointed out, and I was President of one of the large machine tool—or the largest machine tool companies in this whole industry, and I believe it was '83 or '84, and I didn't remember exactly the detail, time, but we received—our company received an order from Poland and under this example, it doesn't make any difference if it was Poland or the Soviet Union—the rules are the same. And it was for machines to make gears and I believe the end product was either hand-powered tools or commercial sewing machines, something like that.

And since it was a controlled product, we had to apply for a license and the license was denied. My peoples' reaction was, "Ah, boy, here we go again." My reaction is, "We must appeal." And we did appeal. Long story, short, eventually we were allowed to ship that machine, but we had to go in and we had to physically change

the geometry permanently on that machine so it wouldn't make the kind of quality that the machine normally was produced at.

Now, that machine was a marginally profitable machine for our company at that time. In fact, from a full cost basis, because of the exercise we had to go through, we lost money. But that isn't the point of my story.

The reason that machine was on the control list was because during World War II, it made gears for the Norden bomb sight. Now, I would challenge anybody here—you can go to any junkyard in the United States, or better known as World War II memorabilia shops, and I think for maybe a hundred bucks, you could buy a Norden bomb sight because the technology is passe. But isn't it tragic that we have a control list in place that has those kinds of things still being controlled? No other reason for that product being on that list.

Now, the other industries that are maybe being relieved of some of that burden, like the computer industry and the telecommuncation—maybe they have their Norden bomb sight ghost stories as well, but the thing that was tragic to me—this morning, I heard from the early panel was that it was clear that if political change hadn't occurred in Eastern Europe, we wouldn't be sitting here talking about this; we'd still be working today under the same kind of restrictions we've been working on for 16 years.

Now, American industry, Mr. Chairman, cannot survive like that.

[The prepared statement of Mr. Moore follows:]

STATEMENT BY
ALBERT W. MOORE
PRESIDENT
NMTBA - THE ASSOCIATION FOR MANUFACTURING TECHNOLOGY
BEFORE THE
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
MAY 16, 1990

I. INTRODUCTION

Good morning, my name is Albert W. Moore. I am President of NMTBA - The Association For Manufacturing Technology, a trade association whose membership includes over 300 machine tool building firms with over 400 locations. Accompanying me this morning is James H. Mack, NMTBA's Vice President of Government Relations and Charles F. Carter, Jr., NMTBA's Vice President of Technology.

We appreciate the opportunity to address this Committee on the President's proposal to replace today's outdated export control list with a far shorter, more appropriate core list of technologies.

II. THE IMPORTANCE OF THE U.S. MACHINE TOOL INDUSTRY

America's machine tool industry builds and provides to a wide range of industries the tools of manufacturing technology including cutting, grinding and forming machines, universal measuring machines, and automated manufacturing systems. Although our industry is relatively small by some corporate standards, it accounts for a very basic and strategic segment of the nation's industrial capacity. Not only does our industry build the machines essential to our military readiness and our ability to respond quickly and effectively in the event of a national emergency, but it also builds the product which underlies virtually every other commercial product. Machine tools are the very essence of the

industrial manufacturing process. They are the "tools of production." Our industry is the belt that holds up the pants of America's military and economic security.

This fact presents us with a dilemma when devising a workable export control list. On the one hand, it is critical to have a viable and globally-competitive machine tool industry in order to maintain domestic production capacity. If our industry is weakened, America runs the risk of becoming foreign source dependent on goods necessary to national security and economic stability. On the other hand, we must be careful not to export products or technologies that will be diverted for military end-use and that are unavailable from sources other than the United States. Therefore, when developing an appropriate core list of controls, we must make certain that whatever controls are put in place are multilateral in nature and uniformly enforced by our Western allies.

III. THE CURRENT EXPORT CONTROL SYSTEM IS AN IMPEDIMENT TO U.S. COMPETITIVENESS

The Soviet Union has become the world's third largest importer of machine tools -- at over $1 billion per year. In the mid-1970s, U.S. companies supplied roughly 15 percent of Soviet machine tool imports; today they supply about one percent. In 1988, West German and Japanese machine tool exports to the USSR totalled $568 million and $122 million, respectively; ours were $1.3 million. It is no wonder that our members feel they are getting squeezed out of an increasingly expanding market.

Owing in large part to our outdated export control policy, U.S. machine tool builders have come to be seen as unreliable suppliers by foreign customers, including the Soviets who have aggressively sourced elsewhere while ignoring competitive U.S.

manufacturers. Our competitors used the income generated by the machine tools they sold to the Soviets to increase their research and development, to refurbish their facilities, and to capture a large share of our domestic market.

It is essential that American manufacturers be given the chance to regain a piece of the expanding markets in Eastern Europe and the Soviet Union, if we are going to compete successfully in the global marketplace.

IV. THE CORE LIST MUST REFLECT TECHNOLOGICAL AND POLITICAL REALITIES

Export control is both a technological and a political issue, and the core list must take both into account. The list should accurately reflect the technological developments of today and be continually revised to reflect the advances which will occur tomorrow. There must also be the political will throughout the control regime to keep these certain core technologies uniformly controlled. It does the United States no good to develop a list that will not be enforced by the entire COCOM alliance. Therefore, it is absolutely necessary to convince those countries who would put their commercial interests first, that they are endangering their national security by doing so. Only then can the system work. What is the use of an outdated control list that only the U.S. enforces?

The struggle between technology considerations and political will creates tension in the export control system. A core list developed exclusively by scientists determining state-of-the-art technologies is useless, if politics are not taken into account. There is an obvious tension between those whose principal interest is in denying militarily critical technology -- including dual-use

items -- to the Soviet Union or other potential adversaries and those whose principal interest is in exporting as much as they can as fast as they can. However, unless a balance is struck -- and is matched up with worldwide technological developments -- the whole system is unworkable.

V. REBUILDING CENTRAL EUROPE

The 1990s will be characterized by two inexorable forces. One is the continuous advancement of technology. The other is the determination of people all over the world to be free. The last few months have shown us that the struggle to be free will ultimately succeed, and it is America's responsibility to foster this movement toward democracy.

This means providing the newly-emerging democracies in Eastern and Central Europe with the modern technology and equipment that they must have in order to rebuild their economies, essentially from scratch. They will need access to the materials necessary to construct roads and bridges, to build new plants, and to update existing facilities. Otherwise, they and the freedom movement will not survive.

Clearly, the underpinning of any manufacturing revitalization, whether in the U.S. or in Central Europe, is access to the latest machine tool and other manufacturing technology. The United States can choose to take part in the rebuilding of Central Europe, or we can stand by while our allies take the lead.

VI. PROBLEMS IN THE U.S. SYSTEM MUST BE RESOLVED

However, before the United States can even begin to build and nurture these emerging democracies -- before we can even devise a new export control core list -- something must be done to remedy

the cumbersome interagency process that governs policy-making and individual license decisions.

The current export licensing process involves the submission by an exporter of a license application to the Department of Commerce. If the item is destined to a Communist country, the Defense Department has veto authority over the license application. In 1979, Congress adopted language which arguably may give the Defense Department the right to review applications for exports to countries that may pose a risk of diversion. Recent proposals have been made that the State and Defense departments should have the right to review licenses involving the export of missile technology and chemical weapons. Although Congress has, from time to time, imposed various deadlines on the interagency review process, the practical effect of the process has been delay and confusion for American exporters.

I have attached as Exhibit A an article I wrote prior to the President's May 2nd announcement to decontrol certain machine tools to the PRC Green Line level, describing the machine tool industry's experience with this cumbersome interagency process during the reexamination, for the first time in sixteen years, of the machine tool control list at COCOM. The Department of Defense's (DoD) position during this process would have, if adopted, "decontrolled" machine tools which no self-respecting commercial customer anywhere in the world would accept.

The Administration ultimately came to the right decision: to decontrol most machine tools with commercial end-uses to the PRC Green Line level. This move will not impair our national security in any way. Export licensing requirements will remain for equipment that is truly strategic. For example, machines with multi-rotary

axes (the type illegally shipped by Toshiba Machine to the Soviet submarine production facility) will continue to be controlled. Controls will also continue on equipment for manufacturing parts for such highly accurate commercial products as automotive fuel injectors, refrigeration compressors, computer hard drives, higher grades of bearings, precision dies, microwave guides, precision instrument parts, special cams, and large precision measurement and optical instruments.

However, DoD intransigence on this issue almost caused the demise of COCOM. It is critical that the cumbersome, anachronistic interagency process not regenerate a loss of U.S. competitiveness by unnecessarily delaying decisions on individual license applications for exports above the new decontrol level.

The time has come for Congress to reexamine the rationale for the entire interagency review process. Policies and circumstances which may have required certain responses in the 1960s and 1970s may no longer be relevant as Congress establishes export control policy for the 1990s and the dawn of the twenty-first century. Is it any longer necessary for the Commerce and Defense departments to replicate studies of the technological performance of a particular export item and the reliability of a particular end-user? Either the Commerce Department should be given the authority and the resources to conduct its own studies and to properly reflect the President's policies through the maintenance of control lists and the issuance of export licenses; or a new separate agency should be set up along the lines of that proposed by Senators Garn and Heinz to handle this task. Other agencies (such as the Defense Department) could be called upon for advice and counsel, but

the final decision-making authority should be vested in a single agency. This would conserve governmental resources and would eliminate the redundant and time-consuming interagency review process. Perhaps then, the U.S. could begin to convince our allies which controls are necessary.

VII. THE HOUSE EXPORT CONTROL REFORM BILL

Although not within this Committee's jurisdiction, I would urge its members to support the Foreign Affairs Committee legislation that could reach the House floor as early as next week. The Export Facilitation Act of 1990, H.R. 4653, would reauthorize and amend the Export Administration Act which expires at the end of August. Chairman Gejdenson and Rep. Roth introduced the bill which requires the Administration to propose to COCOM that all exports be decontrolled below the PRC Green Line (the Administration has already taken this step with respect to machine tools) along with expedited presumption of approval process for shipments above PRC Green Line to civilian end-users in Poland, Hungary and Czechoslovakia.

H.R. 4653 also decontrols all exports to COCOM countries, thus eliminating 27,500 licenses per year. Among its other provisions, the legislation sunsets all export controls on October 1, 1991, unless they are reinstated with justification; requires annual indexing of the PRC Green Line performance levels; limits the DoD review and veto of license applications for exports to the Soviet Union, Bulgaria, Romania and military end-users in other controlled countries; and makes the act self-executing.

If passed, H.R. 4653 would go a long way toward resolving the problems which characterize today's export control system.

VIII. CONCLUSION

What constitutes an appropriate core list of machine tool technologies? I don't know. Although the British view of addressing the export control regime as a mutually enforced core list of truly militarily critical technologies may be regarded in some quarters as a novel and innovative approach, I do not find it so. An appropriate core list concept should have been the rationale for export controls all along. To regard an export control list as anything other than a core list is to substitute a different rationale for controlling exports for the rationale contemplated by existing law -- to multilaterally restrict access by our potential adversaries to goods and technology that are likely to contribute to their military capabilities to the national security detriment of the United States and its allies. Unfortunately, by refusing to adjust the list's core to reflect the development of generally available technology over time, the U.S. has attempted to control the export of virtually everything and has ended up controlling virtually nothing, because our allies effectively abandoned the multilateral effort.

The President's machine tool proposal reflects a compromise between the three realities of worldwide technological development, the need to restrict military uses of high technology by our potential adversaries and Western political will. If I were king, would I have drawn the line further along the spectrum of technological development so as to accurately reflect that which is readily available for commercial end-uses? Absolutely.

Is the President's proposal an appropriate core list for tomorrow? Absolutely not. I cannot begin to imagine the

technological advances that will take us into the future. Can we really put in place a system in 1990 that is going to be relevant in the year 2006? That is as sure a prescription for failure as it was when we put in place a machine tool control list in 1974 and waited sixteen years to revise it in 1990. There must be some mechanism that regularly and frequently measures technological development and adjusts the core list accordingly. The indexation provision in H.R. 4653 may provide the beginnings of such a mechanism.

We cannot afford to let the world progress without us. We are truly in a global society in which we must encourage the freedom of others while we ensure our own security. This can only be done by recognizing that both technological and political realities change, and then changing with them.

EXHIBIT A

COCOM: TIME FOR A CHANGE

by Albert W. Moore, President

National Machine Tool Builders Association -
Association for Manufacturing Technology

As the Export Administration Act comes up for reauthorization in 1990, a look at the process by which U.S. export policy is made seems in order. If the machine tool industry's experience with our own government and with CoCom is any barometer, that examination needs to be grounded in real-world realities. The Cold War world that gave birth to CoCom no longer exists and CoCom itself is changing. The U.S. has to change with it or suffer in the competitive environment of world trade—not because of inferior goods, but because of a myopic government policy perspective.

CoCom was created when it was important—for strategic reasons—to keep Western technology under a tight lid. Essentially, the NATO nations (except Iceland) plus Japan and Australia agreed to a multi-lateral regime of export restrictions that would deny to potential adversaries the products and technologies that would increase their military capabilities.

Each signatory agreed that selling a restricted product to a communist country would require an export license, to be presented to CoCom headquarters. The deal would go forward only if CoCom consent were *unanimous*.

Unanimity Breeds Contempt. As with any such arrangement, its effectiveness requires that uniformity in enforcement match unity of intent. Most CoCom nations have been (putting it euphemistically) "relaxed" in their enforcement, except for Canada and the U.K. and, more recently, Japan. Few now see much real danger in forgoing trade advantages by dealing in goods that are behind the technological curve. Thus, the trade in sophisticated manufactured goods has, with increasing speed and volume, trickled over, under, and through the Iron Curtain, until it has become a gushing torrent.

The Soviet Union's hunger for Western manufacturing technology has now grown to the point that it has become the world's third largest importer of machine tools—at over $1 billion per year. In 1988, the Germans and the Japanese supplied about 50 percent and 12 percent of that market, respectively, while the 1988 U.S. share stood at an anemic $1.3 million (.0013 percent, compared to 15 percent in the mid-1970s). U.S. builders understandably feel they are getting squeezed out of an increasingly expanding market.

As part of the U.S. government's response to the Soviet invasion of Afghanistan in 1979, the United States followed, until May of last year, a strict "no exceptions" policy vis á vis the USSR, i.e., we would not bring any "exception requests" to CoCom and we would block exception requests brought by our allies. This posture intensified our allies' inclination to construe the restrictions liberally; thus, they avoided applying for exception requests. The U.S. government, of course, didn't apply for exception requests either, but for an entirely different reason: In its wisdom, the government decided that the restrictions *did* apply to borderline cases.

In the early 1980s, however, when our relations with the People's Republic of China had improved significantly (and Sino-USSR. relations became more strained), the U.S. and its CoCom allies agreed to allow more technologically advanced exports to the FRC than were permitted to the USSR. The agreement to this so-called "PRC green line" thus created a two-tier market with respect to communist countries. It also brought the U.S.'s "no exceptions" policy under more questioning. Our European CoCom allies accused us of wanting to expand our trade with our new-found friends in Asia while attempting to lock them out of their traditional markets in the Soviet Union.

U.S. builders also continued to chafe under the fact that the list of machine tool items subject to CoCom agreement, and which thereby set the parameters for the U.S. "no exceptions" policy, has not been revised since 1974. Japanese, German, and other European builders proclaim themselves prepared to enforce a "credible" list of proscribed items, but not to impose blanket restrictions on 16-year-old technology. Thus, NMTBA's problem with the U.S. government's position is something like this:

> What advantage can enforcing export controls on 16-year old technology provide the Western alliance? The U.S. denies very little to the Soviets that they cannot get from America's allies, but we clearly deny business and jobs to American companies and workers. Our allies capture the business we forgo, then use their increased revenues to attack us in our own markets.

Taking a New Look at an Impotent Policy. The whole question was slated for reexamination throughout CoCom in 1989. In the U.S., this new look was enormously complicated by the process by which export licensing and policy decisions are made. The licensing program is run by

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the Commerce Department's Bureau of Export Administration, with consultation with the Energy Department on nuclear technology matters and with the Department of Defense on national security-related items. *But, the DoD has—by statute—a veto over licensing exports to any controlled country,* and in some cases, to noncommunist destinations that pose a threat of diversion. In effect, any interagency review process must produce unanimity unless the President overrules the DoD. Thus, if the interagency process cannot produce a unanimous decision, the President becomes the nation's Chief Export Licensing Officer.

DoD's insistence on involvement creates an additional problem of redundancy. The Technical Advisory Committee (TAC) of the Commerce Department and the Department's own technical staff already advise the Secretary on technical developments that have a bearing on potential restrictions to communist countries. The TAC has recommended that the U.S. and its CoCom allies decontrol machine tools whose technology falls below the "PRC green line." Militarily sensitive machine tool exports would still be controlled, but technology that has become common international property (including in the USSR) could be exported to any destination without a license.

The TAC took the view that slide-position accuracy for U.S. numerically controlled machines that could be exported without licenses should be +/- 3 microns for lathes and milling machines and +/- 2 microns for grinding machines—the same as CoCom's "PRC green line" standard. The Defense Department's negotiating position was +/- 10 microns, with a fall-back position of 5 microns. But for U.S. builders to comply with DoD's suggested standard, they would have had to alter their equipment *after* it was produced, because American manufacturers have not produced to

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such coarse tolerances for years. In other words, no U.S. builder could make them that inaccurate. One builder joked that whacking the machine tools with a sledgehammer as they come off the line might do the trick!

Thus, the DoD position provided no relaxation of controls whatever; as a result, it provided no incentive for our allies to enforce CoCom standards any more strictly. The only possible result would be to keep U.S. machine tools out of the marketplace. After mid-February, the DoD position softened to the extent that the U.S. was able, nine months after the negotiations opened, to table a position decontrolling machine tools with a slide-position accuracy of +/- 5 microns, agreeing to "favorable consideration" of a "PRC green line" standard for Poland, Hungary, and Czechoslovakia. But the new U.S. position was not taken seriously by our CoCom allies because it failed to decontrol any modern equipment.

A Look to the Future. Predictably, the CoCom countries, led by the West Germans, have been angry at what they perceive to be U.S. intransigence. The anger reached such a point in the *Bundestag* last December that the Kohl government narrowly averted a German pull-out from CoCom altogether. Kohl's position is further complicated by the very real threat of defeat in this fall's parliamentary elections—a contest in which a principal issue is whether the German Chancellor is sufficiently independent of American influence. The dramatic breakthroughs in Eastern Europe create visions in the German electorate of vast new markets for Europe's most aggressive economy. Increasingly, German thinking on CoCom has crystallized in a form that goes, roughly:

> "Not only are we not going to enforce controls on 16-year-old technology, we are going to stop pretending to, as

> well. If necessary, we will go it alone without the United States ordering us around in CoCom."

That position is backed by a recent recommendation of the technical experts within CoCom, who endorse decontrolling exports up to the "PRC green line" except on very large pieces of equipment. That proposal has been presented to the U.S. on a take-it-or-leave-it basis. But at this writing, DoD's heels are still dug in.

The result is a stand-off. If the CoCom list stays essentially as is (i.e., pegged to 1974 technology), the Germans may well walk hand-in-hand with the rest of CoCom to the "PRC green line" (or beyond it), leaving the U.S. to impose unilateral export controls, bringing CoCom down altogether. Until now, the economic and political power of the U.S. was sufficient to isolate the Germans. Now the tables are turned; the Germans have succeeded in isolating the U.S. CoCom's next meeting to rewrite the list of proscribed products will occur in May. The fate of the Western alliance's multi-lateral regime of export controls hangs in the balance. If CoCom is destroyed by U.S. intransigence, the biggest loser will be U.S. machine tool builders, and with them, U.S. industrial competitiveness.

Policy Lessons and Questions. The lesson here is more than the fact that the U.S. has painted itself into a corner by allowing super-annuated ideological considerations, rather than technological realities, to to drive export control policy. The more significant lesson is for Congress to take the opportunity through this year's reauthorization effort of the *Export Administration Act* to restructure the way export control decisions are made.

The time has come for Congress to scrutinize the entire rationale behind the interagency review process. Many policies and circumstances relevant in the 1960s and 1970s are relevant no longer. In particular, the duplication of effort in assessing the technological performance of specific export items and the reliability of end users, should be eliminated. ***Either*** the Commerce Department should be given the authority and resources to conduct its own studies and reflect the President's policies by controlling product lists and issuing export licenses, ***or*** Congress should place all policy development on export control and licensing functions into a new, cabinet-level Office of Strategic Trade (a position long advocated by Utah's Senator Jake Garn).

Other agencies, e.g., the Defense Department, could be called on for advice and counsel, but the final authority should rest in a single agency. Not only would such a move conserve governmental resources, it would also eliminate the redundant, time-consuming interagency review process. It would not result in the shipment of inadmissable exports to potential adversaries.

In short, America's recent experience with CoCom is a powerful argument for overhauling the way the U.S. handles export control issues. Our policy making has to be able to operate more flexibly. Industrial technology is proceeding at too rapid a pace, and our global competitors are too powerful—and increasingly, too far ahead of us—for the United States to do otherwise.

The CHAIRMAN. I agree.

We have to go vote. This is the final passage on this legislation. We'll be back in five minutes because there's a couple of questions I do want to ask you. I know you've been patient all day, so have I, so be patient together. Okay.

[Recess.]

The CHAIRMAN. As we just got done saying, the nation is safe for one more day. I understand that's the last vote of the day.

The—we want to thank you for your patience and I know that there hasn't been more members here today, but that's all right because the issue I consider to be a terribly important issue, certainly a longstanding policy and a long-range policy of this committee.

But, you know, you raise some very interesting points from my point of view. You talk about the—I believe Dr. Goldberg made that point, that the freedom movement won't survive unless we do something. That's what puzzles me in this whole damn thing, to be honest with you, because the—it just seems to me that unless we move with dispatch, both in Eastern Europe and in the Soviet Union, we're jeopardizing the situations that are existing there, the freedom movement that is basically happening as far as we see it. And I think that from the people we talked to, Dr. Griessbach, in the rest of Western Europe, kind of feel the same way. We got to get something going and get going with it fast because that's the one issue that came forth in every single meeting we attended, dozens of meetings, was based on what was going to happen with COCOM.

Now, what comes up to my mind goes really as follows: What would you say about scrapping COCOM completely? That ought to get somebody started.

Mr. MOORE. Mr. Chairman, let me, if I may—I really don't think it's wise to scrap COCOM completely because there are technologies, even though there are Norden bomb sight stories, there's technologies that do need control. And I think it's going to be difficult to identify them, but I think the most important issue is going to be how do you police the list—

The CHAIRMAN. I agree.

Mr. MOORE. —on a regular basis? Because 16 years is tragic and the industrial base of this country cannot stand another 16-year hiatus.

The CHAIRMAN. Well, elucidate further on that. I mean, you say the 16 years. Let's go back to that a minute.

If COCOM has created that situation to us, what makes you think it's going to work any better?

Mr. MOORE. I think the main reason COCOM hasn't dealt with the review process diligently is the impediment that we, as a country, put in front of that process. I think they clearly would have been further reviews from time to time, but—of the inertia from the basic U.S. position of not wanting to deal with the list.

The CHAIRMAN. Do you believe that the—the other companies were selling and—we know some were selling and transporting technology to the Eastern Bloc anyway?

Mr. MOORE. Well, there have been cases of that, clearly, and we're not—I'm not talking about the cheating issues. When I worry

about people—how they interpret basic COCOM regulations. I think there's enough fuzz in the wording as it is currently that you could lean one side versus the other. We chose to lean the control side; others chose to lean on the export side.

The CHAIRMAN. Yes, but doesn't that say something?

Mr. MOORE. Well, yes, but any document that has ever been written is challenged in its interpretation—

The CHAIRMAN. Well—but isn't it because the COCOM system doesn't have any check and balance in it, basically?

Mr. MOORE. Well, that is—that's true. There has to be a process established in which we're going to constantly review it and we know that in our—in a machine tool like Toshiba—

The CHAIRMAN. I'm aware of the case.

Mr. MOORE. —where there was a flagrant violation and there was cheating, the beauty of the current list says, you know, you are still going to control those things and should you control those things? I think you should.

The CHAIRMAN. Uh-huh.

Mr. MOORE. So there are those technologies that you have to be careful of, but there are few today, versus what they were maybe when the list was conceived in 1974. But what we really have to do—

The CHAIRMAN. Now—

Mr. MOORE. —is an annual review process.

The CHAIRMAN. Now that the Soviet Union and probably Albania are the only two—and China—the only communist countries left, we're whittling that down. I'm being facetious or am I being facetious?

Mr. MOORE. No.

The CHAIRMAN. Do you understand where I'm coming from?

Mr. MOORE. Yes, I know where you're coming from.

The CHAIRMAN. In other words, if everybody talks about Gorbachev surviving, but unless we do something to help him to survive, if that's our interest, you know, we've got some problems, I would say?

Mr. MOORE. Mr. Chairman, I've been in the Soviet Union—

The CHAIRMAN. Should we give some of the information to Lithuania and Estonia—I'm being again the Devil's advocate. We're going to give it to Czechoslovakia and Hungary—

Mr. MOORE. Yes.

The CHAIRMAN. —why shouldn't we give some of that technical data to Lithuania and Estonia? I mean, why should we hold back from them? Are they are enemies, too?

Mr. MOORE. Promoting the peace process, which is one of the statements you just made in helping Gorbachev survive may be a very important thing for this country to do. I've been in the Soviet Union a number of times now on machine tool missions, if you will, and I know what the people on the street are thinking. They have—they have less of everything than they ever have had even prior to his getting in. Because there are a lot of people in the system who want to have it fail. They want to say, I told you so. And if we, as one of the mighty nations of the world, don't try to help him out and support him, who is going to do that?

The CHAIRMAN. Why do the Germans sell so many more machine tools than we did and the Japanese?

Mr. MOORE. As I pointed out earlier, I think one of the things is in the way that they—

The CHAIRMAN. Interpret.

Mr. MOORE. —interpret the current regulations, and I'm not saying that they're trying to cheat. I don't mean that at all. I'm just saying that they interpret it—with the technology people at their elbow. This country does not want to listen to anybody who knows anything about technology.

The CHAIRMAN. That's a very, very powerful statement and you meant it to be.

Just one second and I'll get back to you, but what's puzzling to me is that if the system is to be a mutual security issue—and I want to get into that a little bit later—a mutual security issue, then we should all play by the same rules, I would think. That's where the American people are confused and I have a constituency and I have to go home and report to my people continuously, and this is the questions they ask me.

They think the whole damn thing is a farce from that point of view, that it's a contrivance to keep American industry from having its fair share crack at the markets.

So I'd like to hear from Dr. Griessbach. Do you have better machines than we do? That's the only other conclusion. I know you want to be delicate in that response.

Mr. GRIESSBACH. I would say that, but I think this esoteric thing on what to—the interpretation of an individual control list item is very difficult to specify and to—to nail down.

I think we play on a level playing field. I don't think that German companies take an advantage. They have other advantages. They are close to the market. They happen to be the—for a number of years, the largest machinery and machine tool exporter in the world. So that is—it's natural to some extent that this competitive position is also reflected in dealings with the Soviet Union.

And I can tell you, if you sit at a meeting in Germany industry, talking to the German Government, you would hear some of the same complaints—

The CHAIRMAN. About American—

Mr. GRIESSBACH. —towards the German system, which is maybe not quite as bad, but which has its flaws definitely, so it is not that in Germany it is happy-go-lucky and you are the only ones who have problems, unfortunately. But I think—in particular over the last few years, it was the issue of enforcement, Toshiba and other problems.

There have been strides made under the previous administration to really also establish rules of enforcement which are much more similar. But it leads away from the point that we—point of view that we all share here, that the restrictions are a severe impediment to business for all of us and I think that's the important point to retain.

The CHAIRMAN. Dr. Goldberg.

Ms. GOLDBERG. Mr. Chairman, if I may, there are two very practical reasons why we should not scrap COCOM. One is that there is a continuing threat to not just the security of the United States,

but to western security. There is a strategic threat and more to the point from our perspective, secondly, if you scrap COCOM, then the United States will be the only country operating under the severe export control regime that currently exists. And our companies will be at an even greater competitive disadvantage.

And the reason for that is not that our competitors in Europe and Japan are cheating right and left, it's that they have very legitimately different interpretations of the notion of what is a strategic technology, what is a militarily critical technology.

The CHAIRMAN. If the gentlelady would yield, I understand that. That is what is the—we're not playing in the same ball park, and I don't mean this critically to Japan or to Germany or to anybody else. In other words, if we have 17 nations that can interpret the situation in their own way, then something's got to be spongy about the situation in the first place. And that would seem to be obvious to us.

And if I may interrupt you just one further, one of the reasons why this COCOM hearing is important to this committee particularly is because we are now embarking on major scientific technological programs of international nature. We've already determined one thing and it's very clear to us—at least as far as this committee is—and I think for the Congress—we can't do these big things all alone anymore. We just can't spend that kind of money. We don't have that kind of resources to do it.

Now, we're going to be talking to those Soviets in about another 15 or 20 minutes and we're going to be talking about what we do now with the Soviet Union on the fusion energy program. Now, from our point of view, the Tokamak designs that we're using in Princeton originated—the original concepts originated in the Soviet Union. We are using their basic technology, okay?

Now, we're going to take either a quantum step forward—why is the fusion energy important to us now? You know, we've got gasoline and oil, the whole bit. It just happens to be that energy is an absolute controlling point of the whole world's economy in the first place, and what quantum steps are we going to take at this point to do something, air pollution, acid rain, the whole damn bit and whatever. What are we going to do about it?

Now, question, how do we deal with the Soviets at this point? We're going to be exchanging highly technical information. We're going to be developing highly technical information, working together that nobody else knows at this point, including us.

Do we put—do we put some kind of a constraint on that? Do we say, well, you can't—when they did, then I don't want to get too esoterically involved—when they did the Long March launching, the rockets in China, and we shipped over our satellites, they were contained in a special building—I talked to the Ambassador from China the other day. They had a special building. We had a special team and when they discussed the issues, you discussed the issues outside the building. You did not discuss it inside the building where the satellite was housed and so forth and so on and the idea that we couldn't do the same thing with the Soviets is total bunk. I don't care what the administration says, we know that's true.

But the issue is, in order for us to do that at all, we're talking about technological advances, technological changes. Some of that

information is very important to the United States. The assumption that all the basic technology emerges from the United States is a little bit much. You know where I'm trying to come from?

Mr. MOORE. Amen.

The CHAIRMAN. So we're looking for the longer-range jump—I'm not talking 20 years from now. The next three or four years. What does this committee when it goes back to Congress and has to get Congress to approve the super conductor super collider where we put a ceiling on the United States' investment at $5 billion and 25 percent—20 percent or 33 percent as far as international participation to the tune of another $1.6 or 7 billion coming from international participation?

If they don't participate, we would have to bring the whole program back to Congress again because now it is designed to be international in nature. What kind of constraints do we put on that? What do we do? Where are we kidding anybody and aren't we—we're transferring technology. It's technology that is in brains, if I'm making any sense to you?

Do you see where I'm trying to come? So I can see COCOM to be a bridge, if you like, or maybe an abutment on each side for the moment until we see where COCOM really should go. Or is it deterring that transfer of technology we need in minds alone coming to the United States?

Do you understand what I'm trying to say? Do I make any sense to you? That's the dilemma we're faced with.

Mr. MOORE. Mr. Chairman, if I may just make one more comment on the COCOM question, because a lot of your points go far beyond this statement, but one of the things we have found on the machine tool industry is that there are so many cooks in the kitchen that it's very, very difficult to get any kind of reasonable agreement between all of the people in the interagency process to have to make a decision and someone always has a different point of view.

But it can be, I think, written in a way technically, forgetting the political issues that must also come into play because those you cannot ignore, either—

The CHAIRMAN. I agree.

Mr. MOORE. —develop in any kind of list, but at least I think the technical issues can be cleared up and if, in fact, we could consolidate in some way into one particular agency, whatever that is, the kinds of experience and decisionmaking, then quite frankly, we may go a long way in helping ourselves over some of these hurdles we've created for all of the people in the position, whether they be in industry or in government, trying to understand which is the best way to go.

The CHAIRMAN. The gentleman from Florida.

Mr. LEWIS. Thank you, Mr. Chairman. I understand you asked a couple of questions that I was going to refer to, so I'll bypass those, but I would like to ask the panel, particularly, I guess, Ms. Goldberg, Dr. Goldberg, who should decide what the core technology is? Who do you feel should make that decision?

Ms. GOLDBERG. Do you mean within COCOM?

Mr. LEWIS. Within COCOM. You have already expressed your dismay, I guess, at the DOD's portion of that, so I'd like to know who you think should—

Ms. GOLDBERG. Well, because COCOM is a consensual organization, the—the decision has to be a consensual one, so obviously—

Mr. LEWIS. I recognize that.

Ms. GOLDBERG. —all of the 17 nations have to participate.

I've heard the core technologies exercise described last week by someone in the administration as, if you think of the industrial list as Roseanne Barr, what we have to do is find Marilyn Monroe in there. Now, the notion of all of us figuring out what the essential attributes of Marilyn Monroe are is a fairly mind-boggling exercise.

Mr. LEWIS. It depends on who you ask.

[Laughter.]

Ms. GOLDBERG. As it stands now, as I understand it, the leading agency for the United States is the Department of Defense, with participation of State and Commerce in COCOM. I don't think realistically that's going to change. We would hope, however—

The CHAIRMAN. You have a sense of humor. The other two agencies don't quite look at it that way.

Ms. GOLDBERG. Well—but that's particularly true if, as the administration says, the MCTL is the vital guide or whatever they call it for producing the core technology list.

We would hope that however they proceed, that the views of industry and industry experts—and that the resource of the technical advisory committees is well taken into account. Because that's where the experiences, such as those that Mr. Moore recounted, come from. Those are the people who know what the state of the art is in manufacturing technologies, for example.

Mr. LEWIS. What is your assessment of the commitment by critics of the administration proposal, such as Mr. Gaffney's, that we could very well give away the store to the Soviet Union?

Ms. GOLDBERG. As I understand it—

Mr. LEWIS. You know, the administration's proposal?

Ms. GOLDBERG. As I understand it, first of all, the proposals—and we don't quarrel with this—still maintain differentiation. First of all, between the Soviet Union and Eastern European countries, and secondly, even among Eastern European countries. That's not to say that we don't recognize that there are existing relationships between even the most advanced East European countries, advanced in terms of economic and democratic reform and the Soviet Union, but there are a variety of end user guarantees and verification procedures that can be put into place and that we understand that these countries are willing, indeed, eager, to put into place. On site visits, civilian end user verification and that sort of thing.

Mr. LEWIS. Mr. Moore, could you—want to comment on that?

Mr. MOORE. Well, clearly, from a machine tools standpoint, I think the control vehicle in the United States has to be put into one agency, whatever that agency is. I think the Department of Commerce over the last years has developed a tremendous expertise in understanding what the available technology is out there in the world today and, in fact, with the use of TACs, et cetera, have been able to interface with industry to come up with assistance in the area of identifying what the current state of the art is.

As I said earlier, I think what has impeded any progress or been a sticking point in the whole process of licensing, et cetera, is the fact that we have so much interagency activity going on and everybody seems to have veto over other decisions that, in the end, we've come up with not only a cumbersome system, but a clumsy one.

Mr. LEWIS. Dr. Griessbach, would you like to comment?

Mr. GRIESSBACH. On this earlier point, whether COCOM should be abandoned is in the written statement, but I would like to repeat it. I think there's a recognition that the COCOM system, or at least the control of certain products, whether it's on the munitions list or the control list is a different question, should be maintained. I think that's the consensus shared by German industry.

As far as the U.S. process is concerned, you know, we have that regard here outside us, but in comparison with the German process with yours, our action with the German Government is less formal, maybe more effective. The same is true. I mean, obviously, the German export control has broad arrangements—not export control, but export trading law, if you like, has pretty much the same parameters and also provides for participation of the other agencies.

So it's more, I guess, more a matter of attitude, the way it was mentioned before, than institutionalization and in particular, which does not necessarily contradict what you say, being on the fringes of the security establishment. We, of course, and that has been said before, look for the United States in defining the security issues simply because there's a larger thing at stake here. The role of the United States is bigger and provides whatever, the vast majority of the security establishment for the western world.

So, in our role, we have to look for the United States to provide the definition of what is militarily significant and we hope to have our say within COCOM and intergovernmental negotiations because, of course, it's not going to work if we don't feel that we can agree on it.

We have to relate this to companies that have to—well, that it makes sense.

The CHAIRMAN. Will the gentleman yield for a minute?

Mr. LEWIS. I certainly would, Mr. Chairman.

The CHAIRMAN. I think you're also talking about a—I think you're making a very important point, is credibility. In other words, there is a very definite feeling, and I share that with all of you and the Members of Congress, that the whole system is not creditable. That's coming through very strongly, I think, in the International Affairs Committee and other committees. They're concerned about that.

Mr. LEWIS. This is a good point, Mr. Chairman.

I would—I thank you for those responses. I think it's important that the record reflect that and with my discussion with Ambassador Wendt much earlier, I had to apologize I wasn't here earlier, but another committee prevented that—by giving the store away. There is concern with some of our friendly allies that, you know, about giving away the store.

Mr. Gaffney's comment should be well taken because they very strongly point out, remember the last 50 years, and don't ever forget that the strongest eastern power today is still the Soviet

Union and we mustn't forget that. So whatever changes we make, we should do and be very careful with COCOM.

I'd like one more question, Mr. Chairman. A recent estimate indicates that the capacity of the telecommunications systems doubles every 18 months. The pace of improvement in computers is even faster. Now, how can our list of core technologies keep up with this?

Now, you made a very valid point earlier, Mr. Moore, about the Norden bomb sight. Now how can we correct those kinds of problems? Dr. Goldberg?

Ms. GOLDBERG. One way, and I'll say at the outset that I'm not a scientist or a technologist, so I can't give you a full answer to that question, but it seems to me

Mr. LEWIS. You can probably give a good answer, though.

Ms. GOLDBERG. One way is to concentrate not on products, but on process, and to concentrate on what is really key or enabling technology and not worry so much about the products of that technology. Secondly, obviously, is to do even better than we've been able to do thus far in indexing the list and not waiting 16 years to go back and look at what's on there for machine tools, for example.

Mr. LEWIS. Mr. Moore?

Mr. MOORE. First of all, Congressman, let me—let me go back, if I just could, to a point you just made about Mr. Gaffney's concern about giving the store away. His position on machine tools is that we ought to control things, plus or minus 10 on the positioning accuracy on a micron standpoint would control technology that no self-respecting manufacturer would ever even buy because it's basically junk.

Now, the technology—you don't want to get into something like that. And you have to raise your sights and then you can talk about controls, but you certainly don't want to control those kinds of levels of technology.

I wanted to make that clear. I'm sorry, now, the question again?

Mr. LEWIS. Basically, the question is, how can we keep the core technologies up to date with such rapid changes?

Mr. MOORE. Well, you have to do it on a regular basis, Congressman. You have to develop and you have to put a system together that is going to on a regular basis—and I don't mean regular meaning every 16 years—I'm talking about an annual review, some manner of the process so that technologies, as they change, can be so identified and the list can be modified accordingly.

Mr. LEWIS. Dr. Griessbach, do you have any—do you agree with those comments?

Mr. GRIESSBACH. I think it's very important to realize that the next date envisaged after the June high-level meeting in December, 1990, is not the end of the entire debate. These revisions have to be—have to be periodic.

But if I may slip in here, something that appears to be a little bit unrelated, the results of this change in Eastern Europe can already be seen. When I said that there are numerous obstacles to overcome, such as the currency problems and poor management in the eastern part, it can also be seen that, as a matter of fact, the trade is already increasing and it's particularly apparent, that those countries which have been the most courageous in their reform are

leading. Or trade with Poland has increased by 56 percent, so in spite of these difficulties that you are getting quoted, this process of integration is well under way and I would like to reiterate what I have said before, that it is really important to keep this momentum, to keep the revision of the COCOM list going, be open about necessary reforms and sustain this process of integration of the Eastern European countries which has started.

Mr. LEWIS. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. I want to thank you all for your forthrightness and your being with us here today. We greatly appreciate your background and information and we'll work together to see what we can do to get this matter resolved.

Mr. MOORE. Thank you, Mr. Chairman.

The CHAIRMAN. The hearing stands adjourned.

[Whereupon, at 2:00 p.m., the committee was adjourned, to reconvene subject to the call of the Chair.]

APPENDIX

Committee on Science, Space, and Technology.
Follow-Up Question
Testimony of Allan Wendt, May 16, 1990

Q. Given the long-standing cooperation between the intelligence agencies of the Soviet Union and Eastern Europe, is it really possible to "differentiate" between the two in terms of export controls?

A. Intelligence cooperation between the USSR and Eastern European countries in the acquisition and diversion of controlled technology is a prime concern for the U.S. However, we believe that several of the increasingly independent (politically and militarily) Eastern European countries will find it in their interest to ensure that controlled technology is not diverted to the USSR.

Czechoslovakia, Hungary and Poland have each approached the U.S. offering to adopt safeguard regimes in exchange for greater access to controlled technology. We have held working level discussions with each country on setting up an effective regime. In these discussions, we have emphasized that a key aspect of an effective regime is the cessation of all government involvement, including intelligence cooperation, in the illegal acquisition and diversion of controlled goods and technologies.

The adoption of safeguards and firm commitments from Eastern European countries on intelligence activities are not ironclad guarantees, but we believe that they will give us the necessary margin of comfort and leverage to adopt some differentiation in our export control system. Any system of preferential treatment for these Eastern European countries must, of course, be fully coordinated with our COCOM allies. We are working with them to determine the type and extent of preferential treatment that we might extend.

Committee on Science, Space and Technology
Follow-up Question
Testimony of Ambassador Allan Wendt, May 16, 1990

Q: Describe the progress you are making in helping the nations of Eastern Europe to set up their own export control regimes. How will you satisfy yourselves that these regimes are effective?

A: The U.S. Government has made major progress in liberalizing controls on trade with Poland, Hungary and Czechoslovakia, and in helping these countries implement export control regimes. Our long-standing efforts to convince COCOM to grant preferential treatment to reforming Eastern European countries adopting export control safeguards came to fruition at the June 6-7 High Level Meeting. At the June meeting, we obtained COCOM's recognition that because Poland, Hungary and Czechoslovakia no longer pose a strategic threat to COCOM members, our only concern about high technology exports to these countries is diversion of strategic technology to the Soviet Union and other proscribed destinations. As long as these countries adequately protect Western technology, there should be no barrier to opening trade and helping them build modern free-market economies within their newly-emerging democratic systems.

The United States obtained COCOM agreement at the June meeting on favorable consideration for most exports to countries determined by COCOM to "represent a lesser strategic risk" provided they meet the following export control safeguards requirements:

-- Adoption of adequate export control systems and national commitments to ensure that strategic goods and technology are devoted exclusively to civilian purposes;

-- Provision of end-use assurances backed by national authorities and information as requested by the exporting country; and

-- Acceptance of on-site inspection if requested by the exporting country.

The United States believes establishing an adequate export control system includes the commitment to stop all government involvement in the illegal acquisition of controlled technology and related intelligence cooperation.

This favorable consideration will apply to all items on the COCOM industrial list expect for a short list of highly sensitive items. The High Level Meeting agreed to consider, in January 1991, whether to upgrade the degree of liberalization covered by this preferential treatment.

The United States has been actively working with Poland, Hungary and Czechoslovakia to obtain the necessary commitments to support a U.S. recommendation that COCOM grant these countries the preferential treatment described above. Our bilateral efforts have been highly successful. We have held two rounds of working-level discussions with Poland, Hungary and Czechoslovakia in April-May and June 1990. During the June meetings, we reached ad referendum agreement with all three countries on detailed letters from their Governments describing their commitments to protect imported COCOM-controlled technology, including establishing a safeguards regime and ceasing illegal acquisitions of controlled technology and related intelligence cooperation. The Polish, Hungarian and Czechoslovakian delegations said their governments would send the letters once the agreements reached with the United States were approved by cabinet-level officials. All three countries said they would implement safeguards systems by October 1, 1990. These systems will include an import certificate/delivery verification system and re-export controls.

We hope to receive the letters this summer. Once we receive the letters, we will have the national commitments necessary to recommend that COCOM grant these countries the preferential treatment agreed to at the June High Level Meeting.

During the June 1990 meetings, Polish, Hungarian and Czechoslovak officials expressed satisfaction with U.S. efforts to help them implement safeguards regimes and with COCOM's agreement on preferential treatment. The officials from all three countries thanked the United States, saying the export control assistance and preferential treatment we obtained from COCOM would meet their countries' needs in modernizing their economies.

We recognize the importance of carefully monitoring the implementation and operation of the Eastern European export control safeguards in order to ensure that they effectively protect Western technology. We have already started this process. In June and July 1990, U.S. agencies including State, Customs, Defense and Commerce, sent officials to Poland, Hungary and Czechoslovakia to assess their implementation of export control safeguards. These and other U.S. agencies plan to continue monitoring the Eastern European export control systems, and providing technical assistance and training to ensure that the export control regimes are effective and reliable.

Q.3. There has been criticism recently of the long delays in processing visas from Eastern bloc scientists who wish to study and work in the United States. What are you doing to speed up the process?

A. SCIENCE AND TECHNOLOGY RELATED VISA PROCEDURES CURRENTLY IN EFFECT FOR SOVIET AND EASTERN EUROPEAN NATIONALS REQUIRE SPECIAL CLEARANCE PROCESSING BY VARIOUS AGENCIES WHICH NORMALLY TAKES TEN TO FIFTEEN WORKING DAYS. IN KEEPING WITH THE RAPIDLY CHANGING POLITICAL CLIMATE IN THAT REGION, THE DEPARTMENT OF STATE HAS BEEN ACTIVELY SEEKING WAYS TO ACCELERATE THE CLEARANCE PROCESSING TIME AND PRESSING FOR A RELAXATION IN EXISTING RESTRICTIONS ON SUCH VISITS.

4. In the past, the U.S. government has been extremely concerned about the persecution of Soviet Jewish scientists. What is the current situation?

A: Soviet Jews continue to face widespread discrimination in education, housing and employment. This has made it more difficult for Jews to obtain the education needed to pursue scientific careers, and also to obtain employment in the desired institute or design bureau.

The U.S. has been committed to the promotion of the human rights of all Soviet citizens, including Soviet Jews. We have been greatly disturbed by the bars to religious practice faced by all Soviet citizens; by the routine violation of the most basic human rights; by the denial of the universal right of emigration; and by widespread discrimination and intimidation faced by many Jews and members of other minority groups.

We have seen much improvement in Soviet human rights practice in recent years. There has been a revival of religious and cultural life for Jews and others; many of the most egregious violations of human rights are a thing of the past; and emigration rates are at very high levels.

However, there remains much to be done. The government is no longer associating itself with discriminatory employment and education practices, but has taken no effective steps to halt these practices. Individual applicants are still denied the right to emigrate and few of the improvements have been codified in law. We will continue to pressure the Soviets to complete the task and to enact and implement laws protecting the rights of their citizens.

Q: As a result of recent legislation, there are a number of technical training programs being put in place in Eastern Europe by U.S. public and private agencies. Government officials of these nations have expressed concern to us that some of these programs are poorly run, and are structured more for technically backward societies than for Eastern Europe. Please describe what the Administration is doing to develop effective technical training programs in Eastern Europe.

A: The United States is establishing a technical assistance program that supports the efforts of the emerging democracies of Central and Eastern Europe to move to a market economy.

U.S. technical assistance is based on the premise that the countries of Central and Eastern Europe need help in quickly overcoming the technical gap that developed during forty-plus years of communist rule.

In doing so, we are working closely with host governments and private institutions in the recipient countries to ensure that our assistance meets their priority needs on a timely basis.

At the suggestion of the President, the Citizens Democracy Corps (CDC) has been created in an effort to provide appropriate channels for coordinating private sector initiatives in Central and Eastern Europe and also the USSR. Drew Lewis will serve as Chairman. An executive committee has been named, and a broader board of directors will be chosen in the near future. The Citizens Democracy Corps has also established a clearinghouse of private sector initiatives.

We anticipate that the CDC will make an important contribution to help U.S. private programs be responsive to the needs of the host countries.

6. It is the Committee's understanding that all exports of space-related technology and space qualified hardware are controlled under the Defense Department's Munitions Control List.

Question 6a. Does the Munitions Control List include space-related technologies used on Earth for civilian applications?

Yes, the U.S. Munitions List (USML) includes some space-related technologies that are used on earth for civil purposes, such as in ground support for weather and earth resources sensing satellites. Category VIII of the USML covers as defense articles, inter alia, all spacecraft (manned, unmanned, and satellites), along with all components, parts, accessories, attachments, and associated equipment specifically designed or modified for spacecraft. Category XIb further covers as defense articles all electronic equipment specifically designed or modified for spacecraft and spaceflight.

As a point of fact, the Department of State, not the Defense Department, administers and interprets the U.S. Munitions List. Section 38 of the Arms Export Control Act (22 U.S.C. 2778) authorizes the President to control the import and export of defense articles and defense services. Executive Order 11958 delegates this authority to the Secretary of State, who has designated the Director of the Office of Defense Trade Controls (formerly the Office of Munitions Controls) as the person primarily responsible for administering the International Traffic in Arms Regulations (ITAR) of which the USML is a part.

Question 6b. Could exports of certain space-related technology be controlled under the Department of Commerce's Commodity Control List?

Yes, if the Department of State were to find that such technology was no longer inherently military in character and therefore no longer needed to be controlled on the U.S. Munitions List (USML). In fact, the Department of State is now actively considering, using this standard, whether it could transfer from the USML to the Commodity Control List (CCL) some civil satellite technologies.

The Commerce Department administers foreign policy and other controls, such as those on nuclear technology. I defer to my colleagues at the Commerce Department to explain to you how controls on space-related technologies would operate, were those technologies transferred to the CCL.

Question c. If certain space-related technologies were controlled under the Commodity Control List, what statutory changes would be required for the relevant offices in the Departments of State and Commerce? How would such changes be implemented?

No statutory changes are necessary to transfer the jurisdiction of space-related technologies from the U.S. Munitions List (USML) to the Commodity Control List (CCL).

The State Department decides whether a particular item should be on the USML or would be more appropriately covered by the CCL. Typically, when jurisdictional questions are raised, an ad hoc interagency panel considers whether the item is inherently military in character. The State Department makes the final decision, based on the findings of the interagency panel. When State has decided to transfer an item from the USML to the CCL, the Director of the Center for Defense Trade notifies the Deputy Assistant Secretary of Commerce for Export Administration, and a notice is prepared, when appropriate, for publication in the Federal Register.

Removing an entire category or a sub-category from the USML requires the concurrence of the Department of Defense and the Department of Commerce.

UNITED STATES DEPARTMENT OF COMMERCE
The Deputy Under Secretary for
Export Administration
Washington, D.C. 20230

July 18, 1990

The Honorable Robert A. Roe
Chairman
Committee on Science, Space and Technology
House of Representatives
Washington, DC 20515

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Committee on Science, Space and Technology

Dear Mr. Chairman:

Thank you for the opportunity to review the transcript of my testimony before the Committee's May 16 hearing on "The Effect of Changing Export Controls on Cooperation in Science and Technology." Your letter of June 21 contained two additional follow-up questions, and allowed the opportunity for my reply to be entered into the hearing record. The questions were:

(1) You mention the fact that if a firm's ability to export is hampered, its ability to fund expensive R&D is also hurt. Have you studied the specific effects of export controls on R&D investment by U.S. industry?

(2) In your opinion, how will the results of the COCOM meeting on June 6-7, 1990 affect R&D investment by U.S. industry? How soon will these changes be noticeable?

The response to these questions is as follows:

(1) The Department of Commerce has not studied the direct effects of export controls on investment in research and development. However, in its 1989 report on national security export controls, the National Academy of Sciences Panel on the Impact of National Security Controls on International Technology Transfer commented on the relationship between economic competitiveness and export controls.

The report, titled Balancing the National Interest: U.S. National Security Export Controls and Global Economic Competition, observed:

> **"Export competitiveness is essential to the health of the U.S. domestic economy.** In some industrial sectors, especially high-technology enterprises, firms now must remain competitive in the world market to maintain a share of the U.S. domestic market, due to necessary economies of scale and the increased importance of R&D from foreign sources. The new realities of global competition are not yet fully reflected in the policies underlying current U.S. national security export controls."

(2) As to your second question, the COCOM High Level Meeting agreed to a significant reduction in export controls to Eastern Europe and to the Soviet Union. This decision should open considerable sales opportunities for U.S. producers. The extent to which revenues from these sales will be dedicated to research and development are decisions to be made by individual firms. The majority of the changes agreed to at the COCOM June 6-7 meeting became effective on July 1, 1990.

If you have any further questions, please call Ralph Nurnberger, Director of Congressional Affairs, on 377-0097.

Sincerely,

Joan M. McEntee

Joan M. McEntee

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

August 29, 1990

Dear Chairman Roe:

Enclosed are responses to the questions that you submitted to me on June 21, 1990 in conjunction with a hearing that your Committee held on May 16, "The Effect of Changing Export Controls on Science and Technology."

We appreciate the opportunity to present to you the Administration's views, and we look forward to continuing discussions on this and other topics with you and your Committee.

Sincerely yours,

J. Thomas Ratchford
Associate Director

Enclosure

The Honorable Robert A. Roe
Chairman
Committee on Science, Space and
Technology
Washington, DC 20515

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Committee on Science, Space
and Technology

RESPONSES TO CHAIRMAN ROE

1. QUESTION: What impact will liberalization of export controls have on East/West scientific cooperation? Specifically, what do you think of the advisability of increased East/West cooperation in:

- **o Moon/Mars unmanned exploration,**
- **o Moon/Mars manned exploration,**
- **o the Superconducting Super Collider (SSC),**
- **o Aero-space planes,**
- **o fusion energy, and**
- **o development of passively safe nuclear reactors?**

ANSWER: We support international cooperation in megaprojects in basic sciences, in general. International cooperation in these projects is not only desirable, it is necessary. East-West cooperation, however, is special and requires examination on a case-by-case basis. In the six specific research projects listed, East-West cooperation is being examined by the appropriate bodies in the executive branch. For some, a framework for international cooperation, including cooperation with countries of Eastern Europe and the Soviet Union, is already in place. For example, the United States, European Community, Japan, and the Soviet Union are engaged in developing the conceptual design for a large fusion reactor called the International Thermonuclear Experimental Reactor (ITER). Others, however, are still in the discussion phase.

2. QUESTION: What are other nations (besides the U.S.) doing to further the S&T development of Eastern Europe?

ANSWER: The Department of State has recently asked our Embassies in several industrialized countries to look into the activities of the host country in science and technology cooperation with countries of Eastern Europe. The Department is currently compiling a report of their responses which we will make available to the Committee once completed.

3. QUESTION: The panel of witnesses from universities and scientific societies at our hearing was quite critical of National Security decision Directive 145 (NSDD-14), issued in 1984 that limits access to telecommunications and information systems under the theory that "information, even if unclassified in isolation, often can reveal sensitive information when taken in the aggregate." How has NSDD-145 affected S&T cooperation?

ANSWER: NSDD-145 established a national policy to protect national security telecommunications and information systems against interception, unauthorized electronic access, and related forms of technical exploitation as well as other

dimensions of the foreign intelligence threat. It was not intended to control or impede the release or sharing of information; rather it was intended to establish guidelines and mechanisms to protect the systems used to store and transmit national security information. Earlier this year NSDD-145 was superseeded by a new directive which is limited to protecting systems that process classified national security information. Therefore, NSDD-145 has nothing to do with international cooperation in science and technology, nor does it in any way affect such cooperation.

HARVARD UNIVERSITY

JOHN SHATTUCK, Vice President
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August 16, 1990

Honorable Robert A. Roe
Chair, Committee on Science, Space and Technology
Suite 2321 Rayburn House Office Building
Washington, D.C. 20515

Dear Mr. Chairman:

I am responding to the question that you put to me in your letter of June 21, following the hearing on "The Effect of Changing Export Controls on Cooperation in Science and Technology." I am also enclosing an edited copy of the transcript of my oral testimony before the committee.

More than any other nation, the United States was founded upon and continues to depend upon principles of openness in the exchange of information and ideas. Controls on the availability of scientific information must, therefore, be evaluated in light of these principles. To be consistent with these principles such controls must be demonstrably related to genuine national security interests. Recent information policy trends have included a broad and inappropriate expansion of the concept of national security, leading too often to unnecessary limits on information exchanges. Since there is ample evidence that undue restrictions on information sharing undermine United States competitiveness, there are valid reasons to conclude that we are not as open as we should be. It is not particularly significant, under this analysis, whether we are relatively more or less open than other nations with their own histories and concepts of their national self-interest.

With these general principles in mind, it is important to note that the National Technical Information Service (NTIS) is increasingly hampered by declining numbers of documents being received from the Federal agencies, increased pressure from private sector competition for sales of electronically formatted documents and excessive reliance on increasingly costly paper and microfiche documents. These issues and others led the Office of Technology Assessment to conclude in a recent publication that legislative and administrative action are needed in order for the NTIS to survive. Thus, we can no longer point to the NTIS as evidence that vast amounts of information are readily available. Moreover, the NTIS holdings are by law unclassified. The status of NTIS does not, therefore, address the question of excessive use of classification export controls as barriers to information exchange.

Thank you again for the opportunity to offer my views to the committee.

Yoours sincerely,

John Shattuck

JS:bac
Enclosure

NATIONAL ACADEMY OF ENGINEERING

2101 Constitution Avenue N.W.
Washington D.C. 20418

Office of the Foreign Secretary

August 6, 1990

RECEIVED
AUG 10 1990
Committee on Science, Space, and Technology

The Honorable Robert A. Roe, Chairman
Committee on Science, Space, and Technolgy
2321 Rayburn House Office Building
Washington, DC 20515-6301

Dear Mr. Chairman:

It was a pleasure to be a witness at your committee's May 16 hearing on "The Effects of Changing Export Controls on Cooperation in Science and Technology."

I am pleased now to respond to your letter of June 21, 1990. I have returned the corrected copy of my testimony to Lynne Sullivan. I hope that the following comments on the follow-up questions are not too late to be helpful to the Committee.

1. *The advisability of East/West cooperation in moon/Mars unmanned exploration, moon/Mars manned exploration, the Superconducting Super Collider (SSC), aerospace planes, fusion energy, and development of passively safe nuclear reactors.*

As I stated in my testimony, the changes in export controls now being implemented will reduce constraints on scientific and engineering exchanges including those mentioned in your letter.

However, there remain many other very important considerations, including

- o the technical capabilities of the two parties--whether they are competing or complementary;
- o the feasibility of designing a cooperative program with appropriate assignment of tasks and management;
- o the commitment to common goals;
- o the availability of sustained funding by both parties; and
- o the enthusiasm for and commitment to cooperative goals by the scientists and engineers.

These are in some ways much more complex issues than export controls or concerns about proprietary industrial technology. Further, the projects you cite differ with respect to these criteria. I enclose a recent study by the Academy on the Mars Exploration Program.

Unfortunately, there are some who argue that we should cooperate in order to save money or to achieve political goals. While these are desirable outcomes, they are not sufficient to provide a firm foundation for a cooperative program.

2. *In the past, the Academy of Sciences has been extremely concerned about the persecution of Soviet Jewish scientists. What is the current situation?*

The Academy continues to be concerned about the persecution of scientists and engineers everywhere in the world and works through its Committee on Human Rights to alleviate these problems.

3. *You recommend a more aggressive program to recruit young Eastern European scientists to U.S. universities. Shouldn't we be developing our own scientific base rather than recruiting students from Easten Europe? Won't this program cause a "brain drain" in Eastern Europe? How do we encourage graduates to return to their homelands?*

Certainly, we should be developing our own scientific and engineering base. In particular, we must continue to encourage our young people, particularly women and minorities, to pursue careers in science, medicine, and engineering. This is independent of the size of exchange programs and should be given high priority.

With respect to exchange programs, I did not mean to suggest a more aggressive recruiting program. I did recommend that we continue a strong exchange program which I believe is mutually beneficial to the U.S. and Eastern Europe. The strength of our universities is such that aggressive recruiting is not necessary in Eastern Europe. However, we do need to encourage our own citizens to participate by spending time in Eastern Europe. Of course, we have a similar problem in our exchange with Japan.

One of the long range goals of exhange programs is to strengthen science and technology in Eastern Europe, which in turn improves the economic situation. As Eastern Europe continues the move toward democratization and market economics, opportunites will increase for their scientists and engineers, mitigating the "brain drain" issue and, incidentally, making it even more important that we build our own scientific and engineering base.

4. What are other nations doing to further the S&T development of Eastern Europe?

As you know, the Federal Republic of Germany has been extremely active in furthering the growth of science and technology in East Germany. Other Western European nations and the European Commission are considering many initiatives. We are planning a number of programs to learn more about this and to recommend ways the United States can cooperate with Western Europe.

5. Do you have any recommendations, legislative or otherwise, for additional programs that may be needed to help builg up the S&T infrastructure of Eastern Europe?

I enclose two letters from Frank Press, President of the National Academy of Sciences, which outline his position on these matters.

Sincerely,

Gerald P. Dinneen

Gerald P. Dinneen
Foreign Secretary

Enclosure

NATIONAL ACADEMY OF SCIENCES

2101 CONSTITUTION AVENUE, NW WASHINGTON, D. C. 20418

OFFICE OF THE PRESIDENT

May 10, 1990

The Honorable Lee H. Hamilton
Chairman
Subcommittee on Europe and the
Middle East
Committee on Foreign Affairs
U.S. House of Representatives
Rayburn HOB 2187
Washington, D.C. 20515

Dear Congressman Hamilton:

I greatly appreciated your letter of May 2, 1990, requesting my views on the Support for East European Democracies (SEED) Act of 1989 (PL 101-179).

Your letter is particularly timely. The recent developments in Eastern Europe have been attributable in significant measure to failures of the centrally planned systems of the past to encourage effective application of science and technology to economic development. Thus, it is not surprising that the countries of the region are now searching for new approaches to strengthen their technological capabilities for improving industrial and agricultural productivity and quality. The types of exchange programs identified in the SEED legislation and cited in your letter are helpful in this regard. However, the United States is in a strong position to make more substantial contributions to East European institutional development in scientific research, technological applications, environmental protection, and management and marketing, which will reinforce the transition in Eastern Europe to democracies and market-oriented economies.

In general, I believe that a larger and more directed component of U.S. assistance programs for rebuilding the applied science and technology base of Eastern Europe could have significant economic payoff for these countries within a few years. The relatively well developed educational systems of the region and the presence of a few modern research laboratories in each country provide good points of departure for development of strong technical capabilities within industrial and agricultural organizations and related institutions. However, a majority of the research and development facilities in these countries are poorly equipped, and the technical staffs have been insulated from modern engineering achievements. Equally significant, the management systems simply are not prepared to effectively use science and technology in solving the practical problems of industrial and agricultural development at home or in entering markets abroad.

Among the areas deserving special attention are engineering research and education; technical innovation to increase global competitiveness in the transportation, agricultural equipment, construction, and other traditional sectors; and commercialization of new developments in biotechnology, advanced materials, and other high technology areas. With regard to the pressing needs of the region for greatly improved management skills, the rapid globalization of modern technologies requires very sophisticated approaches to meshing achievements from abroad with indigenous technical capabilities in developing products which are competitive both domestically and on the world market. While the East European countries have many good specialists, they have little experience in combining their technical strengths with the complementary capabilities of international partners, a combination which seems essential for future economic growth.

As you know, the SEED legislation is providing funding for a number of initiatives to help stimulate economic growth, including U.S. contributions to stabilization and enterprise funds. However, the economic needs of the region are so large that in the near term the impact of current U.S. assistance on economic development pursuant to this legislation will be limited. As a longer term complement to the current effort, U.S. assistance in strengthening the science and technology support systems and the linkages of these systems with production activities could be an extremely important catalyst in modernizing East European economies and in enhancing productivity on a broad basis by the end of the 1990s. Programs which bear directly on economic development through capital investment and technical assistance are very important but also very expensive. On the other hand, relatively inexpensive efforts to strengthen indigenous research and development institutions can, with their attendant multiplier effects, be very cost effective in fostering economic growth.

Thus, I believe that more concerted U.S. assistance for enhancing technological research and application activities is clearly warranted. Given the importance of such assistance and our strong capabilities in these areas, a reasonable target would be to have up to ten percent of the total U.S. assistance program for Poland and Hungary, and eventually for the other countries of the region as well, devoted to such activities. This investment could be a decisive factor in economic revitalization while also facilitating more active participation of these countries in the global economic system. As we have repeatedly learned, a solid base of scientific understanding is critical in making wise investment decisions for expanded production capabilities and in using such capabilities to establish appropriate niches in world markets.

At the same time, as East-West linkages continue to develop, the United States should benefit directly from increased contributions of the region to international technological efforts. In addition, the political benefits to the United States from being identified as the major contributor to programs in important technological areas of great American strength would be substantial.

Returning to the specific provisions of the SEED legislation, the cooperative science and technology programs of Agency for International Development (AID), the United States Information Agency (USIA), the U.S. Environmental Protection Agency (EPA), the Department of Agriculture (DOA), the Department of Energy (DOE), and other agencies which are now underway are obviously important in providing Hungary, Poland, and eventually other countries with access to American expertise. But these programs are limited in size and scope; the established priorities of individual agencies do not necessarily match national priorities; and the impacts of the agency programs in terms of economic growth will be quite modest. The new programs of the World Bank in the science, energy, and education areas are also important. They too are limited, but they can provide some of the capital investment that is needed by the science and technology community. Finally, a number of private foundations are expanding their activities in the region; and while they are critically important at this juncture, they cannot have sustained impacts without complementary efforts of governments.

As we learned in supporting science and technology programs in Taiwan and Korea during the 1970s, the traditional assistance programs of the U.S. governmental agencies simply are not designed to promote economic development in countries that are at relatively advanced stages of development. The agencies do not have the legislative mandates, the staff expertise and experience, nor the incentives to promote long-term programs that blend elements of foreign aid, scientific cooperation, and commercial development. With regard to Korea and Taiwan, the U.S. government successfully turned to American industrial and agricultural specialists outside government to help design new mechanisms, including programs initiated by the National Academy of Sciences (NAS). Innovative approaches, such as the establishment of the Korean Institute of Science and Technology and the Korean Advanced Institute of Science, made major contributions to the rapid emergence of these two countries as technological powers. However, the reliance on ad hoc arrangements within the U.S. government agencies, which were not equipped to support such new departures, repeatedly jeopardized continuity of the programs.

Therefore, in addition to the need for more substantial financial commitments for applied science and technology in Eastern Europe, a strengthened U.S. governmental capability for development and administration of such programs should be considered. The current approach to U.S. technical assistance for Eastern Europe, which relies on simply distributing available funding among existing programs, is of course expedient and avoids establishment of new bureaucratic structures. At the same time, however, by relying on traditional approaches we may miss unusual opportunities to develop non-traditional programs which can make a major difference.

I fully recognize the difficulty in modifying well established organizational responsibilities within the government, and perhaps AID and the other concerned agencies can adjust their approaches to the new challenge of technical cooperation with Eastern Europe. However, I urge that alternative

mechanisms also be considered: for example, the Canadian International Development Research Center is a model that has repeatedly demonstrated how an independent organization with a modest budget but with close ties to the foreign aid agency, other governmental departments, and the private sector can bring important new dimensions to technical cooperation programs. This governmental Center with a specialized mission to promote technological development in developing countries has been able to enhance Canadian international programs with a degree of flexibility and innovation which had not been possible within the larger line agencies of government.

Also, as was the case with our success story in Korea, the President's Science Adviser can play a very useful role in involving private sector expertise more fully in our efforts in Eastern Europe. In addition, the Federal Coordinating Committee on Science and Technology should provide a forum for coordinating governmental and non-governmental efforts of interest to many agencies.

Turning to your interest in environmental problems in Eastern Europe, I was very pleased to note the emphasis given to this topic in the SEED legislation and to the related problem of cleaner energy sources. The new DOE and EPA programs are only now unfolding, and I will provide you with my observations on environmental activities in the near future.

Finally, with regard to participation of the NAS in the deliberations of the Executive Branch, we have very good working relationships with specialists in the various departments concerned with the implementation of the SEED legislation. I do not believe that any additional organizational steps are required in this regard.

Again, I express my appreciation for your interest in our views on this critically important topic. Please let me know if we can be helpful in the further development of U.S. programs in Eastern Europe.

Yours sincerely,

Frank Press

Frank Press
President

bc: Glenn Schweitzer
Vic Rabinowitch

NATIONAL ACADEMY OF SCIENCES

2101 CONSTITUTION AVENUE NW WASHINGTON D C 20418

OFFICE OF THE PRESIDENT

June 22, 1990

The Honorable Lee H. Hamilton
Chairman
Subcommittee on Europe and the
Middle East
Committee on Foreign Affairs
U.S. House of Representatives
Rayburn HOB 2187
Washington D.C. 20515

Dear Congressman Hamilton:

This letter supplements the comments I sent to you on May 10 in response to your request for my views on US science and technology interests and activities in Eastern Europe. You will recall that in my earlier correspondence I urged that the US Government give greater attention to providing financial support for the strengthening of applied science and technology institutions within the East European countries.

More specifically, in my first letter I noted that modest assistance to carefully selected technological research institutions in Hungary, Poland, and other countries of the region can be critically important as the countries make the transition from centrally planned to market economies. Such institutions can help both public and private sector organizations make wise choices as to technologies which should be acquired from abroad and those which could be developed domestically. They can provide an essential base of scientific and technical support for the development of modern industrial and agricultural institutions so desperately needed in these countries. Also, as the technological infrastructure of a country develops, that country becomes more attractive to foreign investors, especially technology-oriented firms from the West.

Now I would like to turn more directly to your interest in environmental problems in Eastern Europe, and to steps that the United States might take to help reduce pollution throughout the region. We applaud the emphasis in the SEED legislation on environmental activities, and we are very pleased with the speed of the Environmental Protection Agency in carrying out its responsibilities to establish a regional environmental center in Budapest and a monitoring program in Krakow. Also, the Department of Energy, the Department of Agriculture, and the Agency for International Development have become interested in environmental protection programs; and their activities seem to be off to a good start.

Still, we are concerned as to how relatively small amounts of appropriated funds can make a significant difference in reducing pollution in the region. Consistent with my comments in my previous letter, I believe that the most realistic approach is for the United States to support the strengthening of key East European institutions which can carry out important environmental assessment and pollution abatement activities. Of course in the long run the obsolete industrial base of the region must be replaced with more efficient and cleaner technologies. To this end, environmental considerations become a key factor in implementing the types of institution building programs in applied science and technology which I have previously suggested. Let me elaborate.

The East European countries confront serious pollution problems caused in large part by antiquated and inefficient industrial facilities. As these countries struggle to build competitive and free market economies, they have an opportunity to take advantage of state-of-the-art technologies and advances in manufacturing and industry that are not only economical, but also energy efficient and generate a minimum of waste. In some ways, Eastern Europe should be able to "leap-frog" over the intermediate technological advances of the past several decades, and, whether building new power plants or re-tooling existing manufacturing facilities, take advantage of the best of international engineering and technology in building efficient and clean industries. Of course such a strategy will require a very strong cadre of well trained researchers and engineers to provide the necessary technical leadership.

In the shorter term, there are no good alternatives to simply reducing the current levels of pollution from power plants, industrial complexes, and agricultural enterprises that are already in place. At the top of any list of low cost/no cost priorities must be waste minimization and energy conservation programs, and the United States can share its extensive experience in both of these areas with East European specialists. In the agricultural area, we should encourage all of the countries to move rapidly toward the practice of sustainable agriculture, using strategies that are less dependent on agricultural chemicals and less damaging to soil and water resources. In this transition period we will undoubtedly see rapid growth of new markets for pollution control and abatement devices, and for high-level technology approaches to industry. The US Government needs to be alert to new market opportunities over the next decade as East European manufacturing and industrial infrastructures are rebuilt to modern designs and standards.

Turning to a more limited proposal, we have had preliminary discussions with the Environmental Protection Agency on a somewhat novel approach to developing grass roots support and local competence for environmental protection in Poland. We have suggested this new program for Poland, but it might also be appropriate in Hungary and other countries. Briefly, we have proposed a program of pairing environmental managers and environmental activists from selected U.S. counties with selected districts (county equivalents) in Poland where the environmental problems are severe and

pollution assessment and mitigation capabilities limited. The premise for the teaming of local officials and activists is to share technical and programmatic expertise as well as political experience. The counties in the United States might be selected on the basis of a number of criteria, including presence of ethnic Polish populations and the attendant interest in Poland, and comparability to Polish districts in topographic, environmental, industrial, agricultural, and other economic features.

We have suggested that the US government provide the funding for the initial travel and administrative costs to establish these environmental management pairings. Once working partnerships have been firmly established through reciprocal visits of community leaders, environmental specialists, industrial managers, and concerned citizens, some of the American counties should be willing to continue on their own to work with Polish colleagues in developing and implementing practical approaches to cutting back pollution. If this initial experiment is successful, additional counties, and perhaps other countries, could become involved.

Finally, I would like to mention one concern we have over the current approach of the Executive Branch to environmental problems in Eastern Europe, namely an apparent increase in emphasis on regional approaches. Many of the pollution problems in Eastern Europe cross international boundaries and regional approaches are obviously important. At the same time, however, the difficulties in obtaining concurrent actions by several countries are often enormous. Therefore, we urge that the United States also maintain a very sharp focus on bilateral approaches which are almost always more feasible.

I hope these comments are of use to you. I would be pleased to discuss in further detail our suggestions and new ideas with you if you are interested.

Yours sincerely,

Frank Press
President

bc: Margaret Rostker